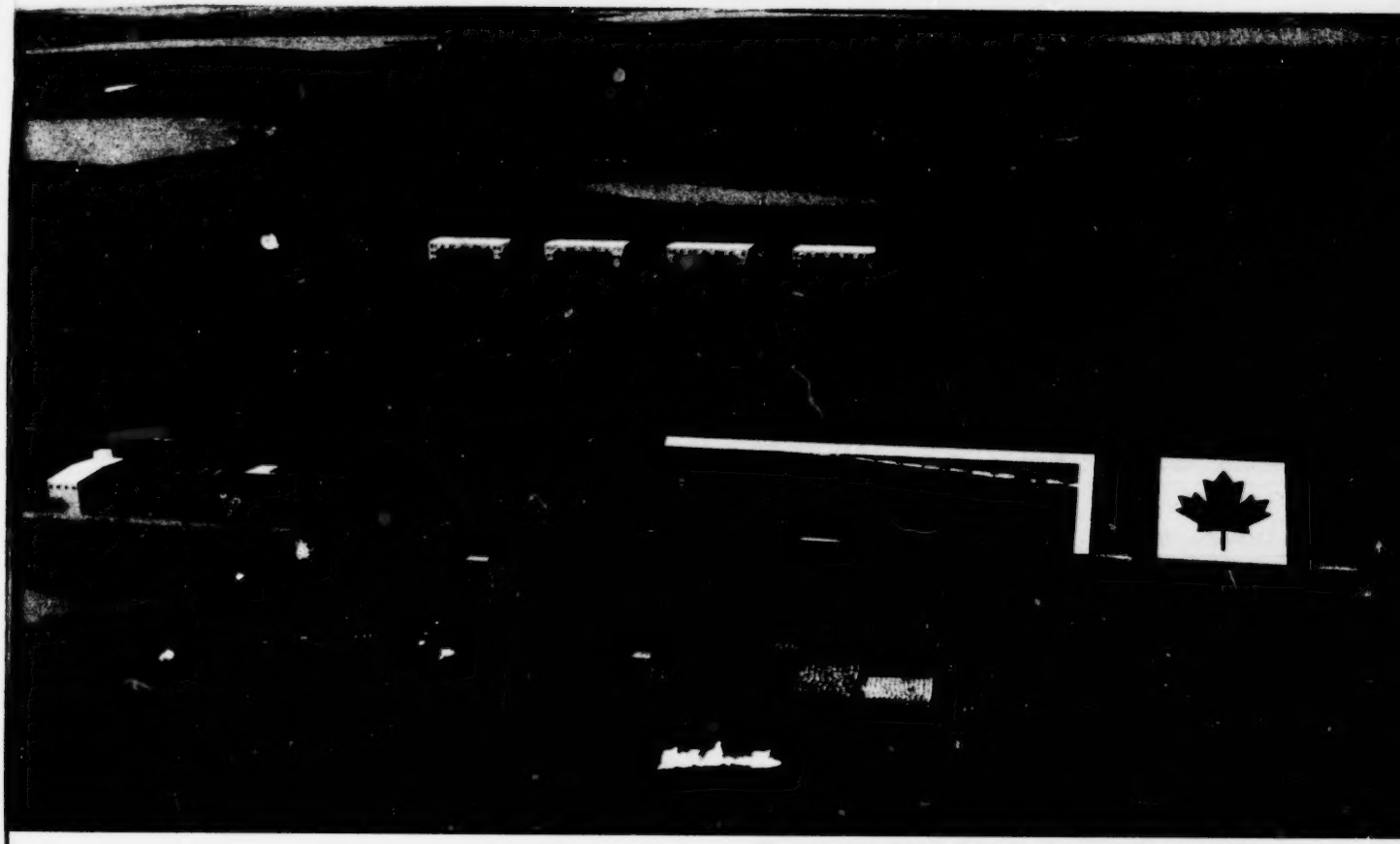
Mines and Mineral Activities 1981

Northern Affairs Program



Cominco Ltd.'s Polaris Mine on Little Cornwallis Island. In the foreground are the mill-concentrator (left) and the concentrate storage building. In the background is the accommodation complex with its television satellite receiver and behind the complex is the airstrip. The mill-concentrator building is 450 feet (137 m) long and eight storeys high.

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Summary

The value of mineral production in the Yukon Territory and Northwest Territories in 1981 was $764.3 million dollars, a decrease of 4.5 per cent in current dollars from the previous year. During 1981 the demand for most mineral commodities softened and prices for lead, copper, silver, and gold declined. Strikes at United Keno Hill Mine's silver operation and Canada Tungsten Corporation's tungsten mine reduced output of silver and tungsten. Exploration expenditures are estimated at $40 million for the Yukon Territory and $50 million for the Northwest Territories.

The outlook for 1982 is for increased lead and zinc production as Cominco's Polaris Mine in the Arctic Island region completes its first year of production. Gold production will also increase in 1982 as the Cullaton Lake gold mine completes its first full year of production and Echo Bay Mine's Lupin gold mine commences production during the first half of 1982. However, the short-term outlook for most potential major projects is dim because low metal prices, high interest rates, increased capital and operating costs and reduced corporate profitability have resulted in deferment of some mineral property developments. Mineral exploration expenditures are expected to decline sharply during 1982.

Mineral production in the Yukon Territory during 1981 was valued at $307.9 million (excluding coal and natural gas), a decrease of 15 per cent from 1980. Production came from mine operations of Cyprus Anvil Mining Corporation (lead, zinc, silver); United Keno Hill Mines Limited (silver, lead, zinc); Whitehorse Copper Mines Limited (copper, gold) and Tantalus Butte Coal Company (coal) and about 197 placer gold mines. Placer gold production reached 3 104 kg in 1981 from 2 271 kg in 1980. Lead and zinc accounted for 50 per cent of mineral production value, followed by silver, 22.6 per cent, and gold, 20.7 per cent. Silver production at United Keno Hill Mines declined 29 per cent from 1980 because of a strike which extended from September 10, 1980 to May 28, 1981.

In 1981, Yukon accounted for 18.9 per cent of the lead, 8.7 per cent of the zinc, 14.3 per cent of the silver, 7.2 per cent of the gold, and 1.3 per cent of the copper produced in Canada. The Yukon accounted for 3.3 per cent of the value of Canadian metallic mineral production.

Mineral production in the Northwest Territories during 1981 was valued at $456.4 million, an increase of 4.7 per cent from 1980. Production came from mine operations of Canada Tungsten Mining Corporation's Cantung Mine (tungsten); Cominco Ltd.'s Con Mine (gold, silver); Cullaton Lake Gold Mines Ltd. (gold); Echo Bay Mines Ltd. (silver, copper); Giant Yellowknife Mines Ltd. (gold, silver); Nanisivik Mines Ltd. (zinc, lead, silver); Noranda Mines Ltd.'s Camlaren Mine (gold); Pine Point Mines Ltd. (lead, zinc); and Terra Mining and Exploration Ltd. (silver, copper). Zinc production increased 28 per cent to 224 206 t in response to strong demand, while tungsten production dropped 38 per cent from the previous year to 2 490 t of WO_3 because of a strike at Canada Tungsten Mining Corp.'s Cantung Mine.

The Northwest Territories accounted for 100 per cent of tungsten, 23.8 per cent of lead, 22.5 per cent of zinc, 7.4 per cent of gold and 3.1 per cent of silver produced in Canada. The Northwest Territories also accounted for 4.9 per cent of Canadian metallic mineral production value.

Mining in the Northwest Territories continued to expand in 1981 with five new mines being developed for initial production in late 1981 and 1982. These include Cominco Ltd.'s Polaris lead-zinc mine and Ptarmigan gold mine, Echo Bay Mine Ltd.'s Lupin gold mine, Cullaton Lake Gold Mines Ltd.'s gold mine, and Cadillac Explorations Ltd.'s Prairie Creek silver-lead-zinc mine. These developments will augment lead, zinc and gold production substantially and more than offset the closing of the Camlaren gold mine in 1981 and Echo Bay's Port Radium silver operation in 1982. Terra Mining and Exploration Ltd.'s Silver Bear silver mine ceased operations in February 1981 but operations may be resumed in 1982. The Salmita gold mine of Giant Yellowknife Mines Ltd. may also be brought into production following the current underground exploration and development program.

Introduction

This report covers mines and mineral activities North of 60° for the year 1981. All aspects of these operations in the Yukon and the Northwest Territories are administered by Northern Non-renewable Resources Directorate, Department of Indian Affairs and Northern Development.

Sections on mineral exploration in the Yukon were based on papers by D. Tempelman-Kluit, J.G. Abbott, R.L. Debicki and J.A. Morin and in the Northwest Territories by W.A. Padgham, W.A. Gibbins, P.J. Laporte, C.C. Lord, and J.B. Seaton. D.D. Brown and T.W. Caine compiled and edited this report.

As of March 8, 1982, the Minister and departmental officers responsible for the administration of mines and mineral resources in the Northwest Territories and the Yukon were:

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Mining Division

Responsibilities

The Mining Division administers mining and mineral rights (excluding oil and gas), develops policies, and initiates and assists in drafting appropriate legislation relating to the administration and disposition of mineral rights in the Yukon Territory and Northwest Territories. The Mining Division advises various government agencies on current and proposed exploration and mining developments, and maintains a mineral resource inventory. The Mining Division in Ottawa is comprised of two sections – Mining Resources and Mining Lands.

In the North, mine and mineral reponsibilities are administered by two Regional Directors who are responsible for the Northern Affairs Program in the Yukon and Northwest Territories respectively. Three separate sections are located in Whitehorse, Y.T. and two in Yellowknife, N.W.T. These are a Geological Services Section and a Mining Lands Section at both cities. A Mine Inspection Section is located at Whitehorse, Y.T., whereas similar service at Yellowknife, N.W.T., is provided by the Government of the Northwest Territories.

Mining Lands

The Mining Lands Section develops policies and initiates and assists in drafting appropriate legislation relating to the administration and disposition of mineral rights in the Yukon and Northwest Territories.

For administrative purposes the Territories have been divided into seven mining districts. A mining recording staff is responsible for the disposition of mineral rights within each district in accordance with applicable legislation. There is a Supervising Mining Recorder in each Territory whose principal function is to ensure that uniform practices are observed in the administration of the various mining acts and regulations.

Mining Resources

The Mining Resources Section maintains a microfilm library on all published geoscientific reports and unpublished assessment reports on mineral properties in the Yukon and Northwest Territories. This office's prime concern is assessment and definition of mineral potential for specific commodities and of areas in the territories relating to proposals concerning land use, parks, land claims, transportation routes, power developments, etc. This Section and Mining Division as a whole inform and advise the Minister on current and proposed mine and exploration developments in the North. Monthly Mines and Mineral Statistics and annual Mines and Minerals Activities reports are produced by the Mining Resources Section for use by the mining industry, public and government.

Geological Services Sections provide a geological service to the mineral industry in the North. Offices are maintained at Whitehorse and Yellowknife. Two core libraries, the H.S. Bostock Library at Whitehorse and the C.S. Lord Library at Yellowknife preserve diamond drill core.

Each has laboratory facilities for core splitting, diamond-saw cutting, thin section preparation and core storage. Regional and district geologists conduct mineral property examinations, collect rocks and mineral specimens and advise the mineral industry, government departments and research scientists on geological and exploration matters. Department geologists assist prospectors in identifying rock and mineral specimens, by conducting prospector training courses and preparing geological compilation maps on mineralized areas.

Mine Inspection

The Mines Inspection Section gives advice on the Mining Safety Ordinance and Mine Safety Regulations of the Yukon Territory as well as the Blasting Ordinance and Regulations of the Yukon Territory. It also prepares new safety legislation when required. A regional mining engineer is stationed at Whitehorse. This senior mining engineer has a staff consisting of a district engineer, an electrical-mechanical engineer, an environmental engineer, a mine rescue superintendent, a claim inspector and a clerk. The Section is responsible for the following: inspection of mines, quarries and blasting operations to ensure compliance with safety legislation; inspection of mineral claims to ensure compliance with safety legislation; inspection of mineral claims to ensure compliance with the Yukon Quartz Mining Act; ensuring that sufficient mine personnel are trained in mine rescue, recovery operations and first aid; conducting ventilation and dust surveys; monitoring radioactive contamination, and carrying out environmental studies at underground and surface mining properties.

Surface complex of buildings at Whitehorse Copper Mines Ltd. a few kilometers west of Whitehorse, Yukon.

Yukon Territory

Mining Production and Development

Mineral production in the Yukon Territory during 1981 was valued at $307.9 million (excluding coal and natural gas), compared to $364 million during 1980. Some 86 per cent of gold production came from placer mining operations, and four mine establishments accounted for production of base metals, precious metals and coal. They are Cyprus Anvil Mining Corp. (zinc, lead, silver); United Keno Hill Mines Ltd. (silver, zinc, lead); Whitehorse Copper Mines Ltd. (copper, gold); and the Tantalus Butte mine (coal).

Placer mining production continued to increase and amounted to at least 99 799 fine oz (3 104 kg) in 1981 valued at $55 million compared to 73 026 fine oz (2 271 kg) in 1980 valued at $42.9 million. Mining operations were carried out in the Sixty Mile, Klondike, Clear Creek, Minto Lake, Haggart Creek and Burwash regions as well as other widely distributed areas.

The Yukon accounted for 18.9 per cent of the lead, 8.7 per cent of the zinc, 14.3 per cent of the silver, 7.2 per cent of the gold and 1.3 per cent of the copper produced in Canada. In 1981, the Yukon accounted for 3.3 per cent of the value of Canadian metallic mineral production.

Some 993 Yukon employees, representing 8.6 per cent of the work force,were permanently employed by the producing mines and additional persons were employed in placer mining.

Development work continued on a number of properties. Cyprus Anvil Mining Corporation proceeded on its long-term $240 million program which will include the development of two new open–pit mines on the Grum and Vangorda ore deposits by the late 1980s and possibly the underground DY deposit. As part of the overall program, modifications to the Faro mill were carried out during the year to enable satisfactory recoveries and concentrate grades when the Grum and Vangorda ores are processed. A major expansion to the tailings facilities was completed and additional power generating capacity was installed.

United Keno Hill Mines Ltd. developed its Venus gold-silver-lead mine (77) at a cost of $9.2 million for a return to production. The project was suspended in October 1981 because of lower than anticipated silver prices and higher than expected capital and operating costs, which had seriously jeopardized the economic viability of the project. The mine is 88 km south of Whitehorse and the 91 t per day mill is 10 km south of the mine, across the border in British Columbia. The mine and mill will be on standby until precious metal prices improve.

Hudson Bay Mining and Smelting continued its $10 million underground exploration and development program on its Tom lead-zinc-silver property (15), near MacMillan Pass, on the Yukon-Northwest Territories border. Work on the decline advanced 872 m to a depth of 125 m. Eight underground diamond drill holes were completed for a total of 690 m. The project will be terminated in April 1982 because of prevailing low metal prices.

Also in the MacMillan Pass area, straddling the Yukon-Northwest Territories border, is the Mactung tungsten deposit of Amax Canada Limited (15). At year-end 1981, Amax announced that production at the Mactung property will not be scheduled before 1984. The Mactung deposit is the largest tungsten deposit in the western world. Together with the Cantung Mine of Canada Tungsten Mining Coporation (a on Map 2), annual production from this region could reach 6.35 million kg (14 million lbs.) of tungsten (W) contained in concentrates by the mid-1980s.

Cyprus Anvil's mine at Faro, Yukon is one of the largest producing lead-zinc-silver mines in the world.

At Howard's Pass, near the Yukon-Northwest Territories border, Placer Development Limited and Essex Minerals continued underground exploration and development in the shale-hosted stratiform XY lead-zinc deposit (16). A total of 457 m of drifts and 256 m of cross-cuts were advanced, and underground drilling tested the mineralization. More work is planned for 1982.

Although molybdenum prices were at distress levels during 1981, Amoco Canada Petroleum Ltd. and Tintina Mines Ltd. reported encouraging drill hole intersections from the Red Mountain molybdenum deposit (50), 80 km east of Whitehorse. Reserves have been calculated at 71.6 million t averaging 0.223 per cent MoS_2 at a cut-off grade of 0.15 per cent MoS_2.

Cyprus Anvil Mining Corporation
Cyprus Anvil Mining Corporation continued to mine the Faro deposit (b). The Faro mill processed 2 751 790 t of ore to produce 201 200 t of zinc concentrate (49.5 per cent zinc) and 111 628 t of lead concentrate (55.1 per cent lead). The company completed the first phase of its long-term $240 million expansion program which includes the development of two new open pit mines on the Grum and Vangorda ore deposits during the 1980s. During 1981, modifications to the Faro mill were completed which will enable satisfactory recoveries and grade of concentrate to be achieved when the Grum and Vangorda ores are processed. Indications are that such milling will commence by 1990. Feasibility studies are underway to determine the development plan for the Grum and Vangorda deposits.

Type:	Open-pit
Location:	209 km northwest of Whitehorse
Product:	Zinc, lead, silver, in concentrate
Mill Rate:	7 410 t per day
Tonnes Milled:	2 751 790
Reserves:	30.9 million t in Faro deposit (Dec. 31, 1981)
Reserve Grade:	3% lead, 4.6% zinc, 38.7 g silver per t
Employees:	490

United Keno Hill Mines Limited
United Keno Hill Mines Limited (d) continued to produce silver-bearing lead and zinc concentrate from six underground mines and two open-pit mines and stockpiled ore, all in the Elsa area. In 1981 the company's Elsa mill processed 60 700 t of ore to produce 36 569 kg (1 175 732 oz) of silver contained in 3 536 t of lead concentrate and precipitate. Production in 1981 was 15 187 kg (488 268 oz) less than in 1980. Production during 1980 and 1981 declined from 1979 when silver production amounted to 72 178 kg (2 320 522 oz), because the mine operation was struck from September 10, 1980 to May 28, 1981. The company will suspend operations at lower grade open-pit mines in 1982 and increase production at higher grade mines, such as the Husky and Ruby mines, because of low silver prices and high operation costs.

Type:	Underground and open-pit
Location:	50 km northeast of Mayo
Product:	Silver, lead, zinc
Mill Rate:	356 t per day
Tonnes Milled:	60 700
Ore Reserves:	242 132 t (Dec. 31, 1981)
Reserve Grade:	925 g silver per t, 4.1% lead, 0.3% zinc
Employees:	280

Whitehorse Copper Mines Limited
Whitehorse Copper Mines Limited (a) continued to mine from its underground mine near Whitehorse. The company milled 726 100 t of ore to produce copper concentrate containing 9 068 t of copper. Silver contained in concentrate amounted to 6 045 kg. Gold contained in concentrate amounted to 489 kg. The mine is expected to close in the fourth quarter of 1982 because of ore reserve depletion.

Type:	Underground
Location:	11 km south of Whitehorse
Product:	Copper, gold, silver
Mill Rate:	2 014 t per day
Tonnes Milled:	726 100
Ore Reserves:	1 202 040 t (Dec. 31, 1981)
Reserve Grade:	1.35% copper
Employees:	205

Tantalus Butte Coal Company
Tantalus Butte Coal Company (c) mined 20 860 t of coal from its open-pit mine near Carmacks during three months in 1981. Coal from the mine is delivered to the Cyprus Anvil concentrator near Faro for use in drying lead and zinc concentrates.

Type:	Open-pit
Location:	Carmacks
Product:	Sub-bituminous coal
Tonnes Produced:	20 860
Reserves:	27 000 t (Dec. 31, 1981)
Employees:	18 (seasonal basis)

Placer Mining

Placer activity continued at a high level in 1981 and drill testing and bulk sampling were conducted in several areas to define placer gold resources. Mining operations were carried out on Sixty Mile, Klondike, Clear Creek, Minto Lake, Haggart Creek and Burwash Creek (96), Livingstone Creek (97) and other areas. Canada Tungsten Mining Corporation Ltd. operated its 152.8 m^3 (200 cubic yard) per day gold-tungsten placer plant on the Dublin Gulch property for the first full year in 1981. Queenstake Resources Ltd. operated its 1 528 m^3 (2 000 cubic yard a day bucket line dredge on Clear Creek (95) near Mayo. Other companies include Copperfields Mining Corporation on Sulphur Creek (94) and Sixty Mile River (92) near Dawson; Miben Mining in the Dawson area; Crescent Mines Limited and associated Sundance Gold Limited with placer operations on Clear Creek, east of Dawson (95), and Cogasa Mining Corporation on the Sixty Mile River (92). Among the larger private companies were Territorial Gold Placers Limited with camps in the Klondike area, the Arctic Rim Operators with operations on three properties in the Dawson area, and Lorne Ross in the Klondike area. While most operations use the conventional sluice box mining method, there were a number of innovative devices used to recover gold. Two underground mines were started on Hunker and Miller Creeks in the Klondike (93) area to recover gold from the Tertiary White Channel gravel deposits.

Mineral Exploration

Mineral claims staked and recorded in the Yukon Territory during 1981 with comparative figures for 1980 are:

Districts	*Claims Recorded*	
	1981	*1980*
Whitehorse	3586	3281
Dawson	1068	2091
Mayo	3208	2253
Watson Lake	3430	3545
Total	11292	11170

In addition, 7 160 placer claims and 597 placer leases, largely in traditional mining areas were registered. The decrease in gold price during late 1980 and 1981 curbed the rush to acquire leases, but the number of claims staked increased as existing leases were converted to claims. The total length of claims and leases held increased to 6 210 km on Sept. 30, 1981 compared to 5 830 km in 1980 and 3 500 km in 1979. Bulk sampling programs were carried out on a number of properties. Water permits were issued for 350 placer mining operations.

Exploration activity in the Yukon continued at a strong pace in 1981; however, the outlook at year end (1981) was for reduced exploration activities in 1982 because of economic recession and low metal prices. Advanced stages of exploration and development on properties with mineral deposits accounted for much of the $40 million estimated for Yukon mineral exploration in 1981. Exploration projects continued to reflect interest in zinc-lead-silver, tungsten, molybdenum and gold deposits.

A summary of exploration activities is given in Table II, and locations of these exploration activities are shown by numbers in Map 1.

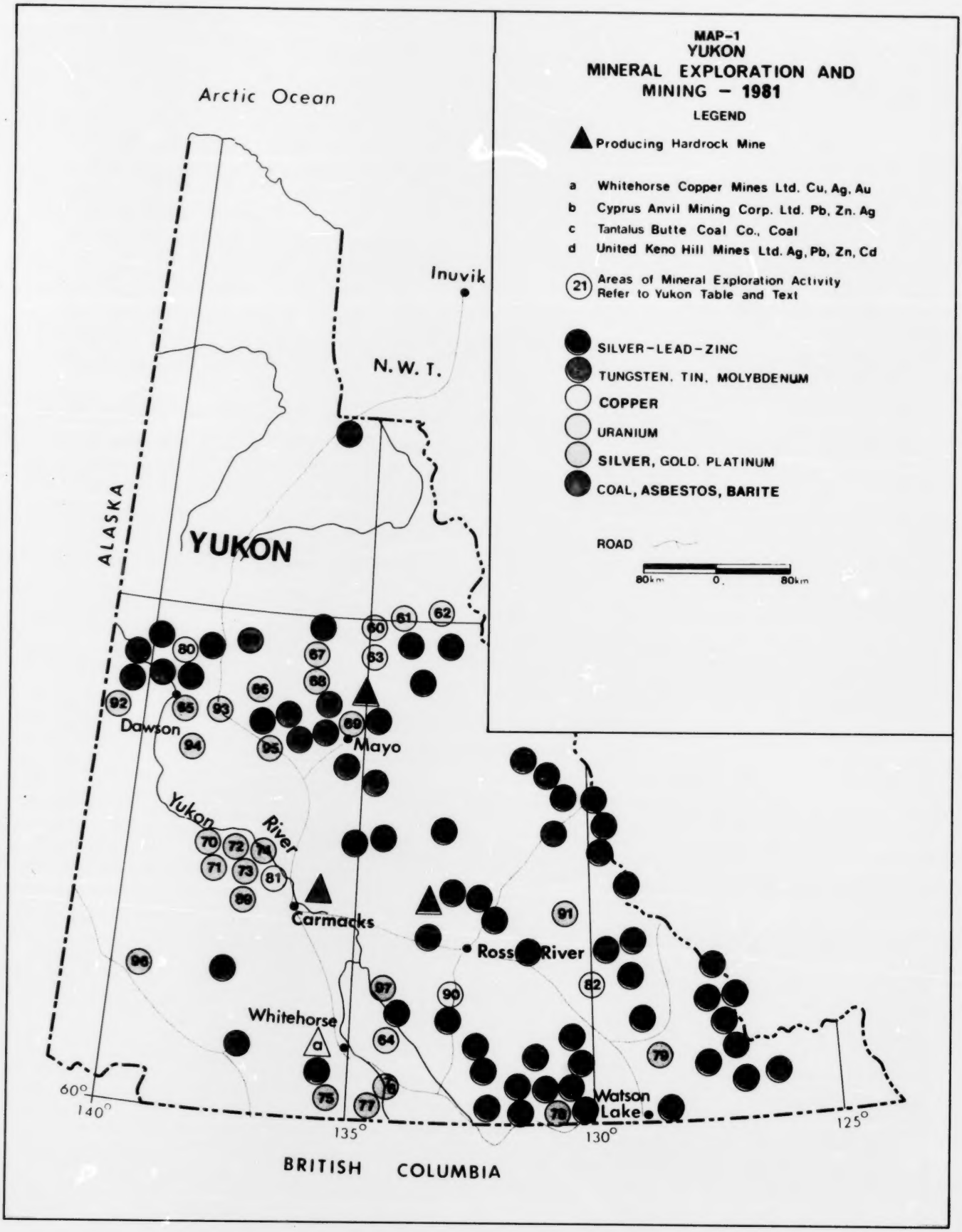
Lead-Zinc-Silver

Lead-zinc-silver targets were the object of drilling in the Anvil district, MacMillan Pass area and Clear Lake area.

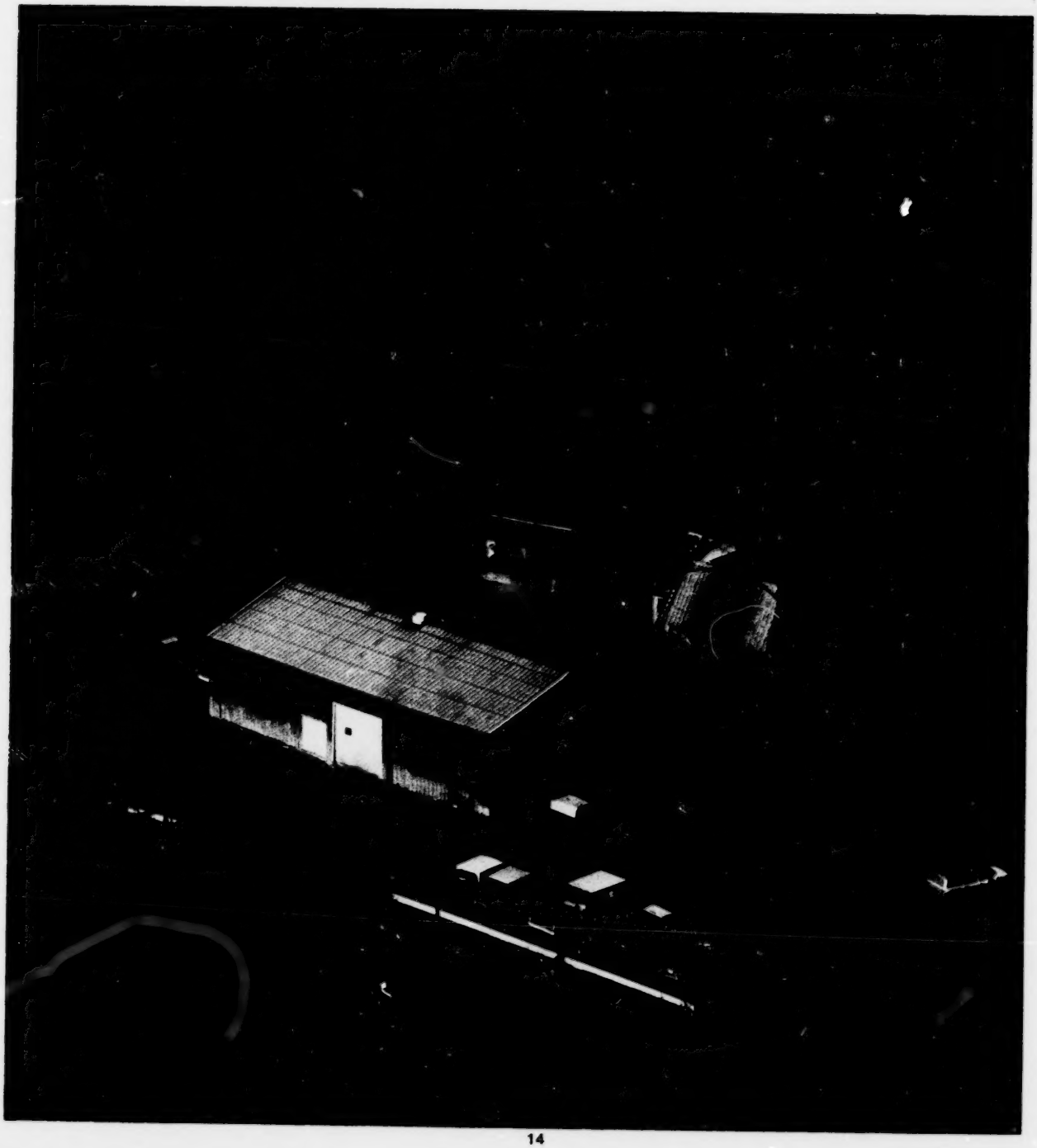
The intriguing shale-hosted massive sulphide-barite deposit at Clear Lake (7), across the Tintina Trench, was investigated by the MacMillan Joint Venture of Getty Mines Ltd. and Essex Minerals Co. Some drill intersections of the stratiform pyrite, pyrrhotite, galena, sphalerite and barite mineralization are over 100 m long. Some 50 km to the east of Clear Lake, Welcome North Mines Ltd. and Esperanza Explorations Ltd. discovered lead-zinc mineralization in Devonian-Mississippian rocks and staked the LADY DI claims (27). Anaconda tested its STYX claim groups (2), 35 km north of Dawson City, with 350 m of drilling. The company also drilled 1 000 m in a lead-zinc-silver skarn on the ACE property, in the Earn Group, east of Clear Lake (8), on Dromedary Mountain.

In the Faro-Ross River area, Cyprus Anvil Mining Corporation drilled 1 067 m on the TENAS, MEL, BAR properties (11), optioned from Welcome North Mines Ltd., in its continuing search for massive sulphides in Anvil-type strata. Getty Mines Ltd. conducted EM geophysical and geochemical surveys in the Anvil district over the EVA, ALICE and MABEL (10) claims and detailed gravity surveys on the RACHEL, MN and CIVI claims.

In the Pelly Banks area (17), Hudson Bay Exploration and Development drilled 685 m and conducted EM surveys to check out previously determined anomalies on ground optioned from the Pelly Bank Syndicate.


MAP-1
YUKON
MINERAL EXPLORATION AND MINING – 1981
LEGEND
Producing Hardrock Mine
a Whitehorse Copper Mines Ltd. Cu, Ag, Au
b Cyprus Anvil Mining Corp. Ltd. Pb, Zn, Ag
c Tantalus Butte Coal Co., Coal
d United Keno Hill Mines Ltd. Ag, Pb, Zn, Cd
21 Areas of Mineral Exploration Activity Refer to Yukon Table and Text
SILVER-LEAD-ZINC
TUNGSTEN, TIN, MOLYBDENUM
COPPER
URANIUM
SILVER, GOLD, PLATINUM
COAL, ASBESTOS, BARITE
ROAD
80km 0 80km
Arctic Ocean
Inuvik
N.W.T.
ALASKA
YUKON
Dawson
Mayo
Yukon River
Carmacks
Ross River
Whitehorse
Watson Lake
60°
140°
135°
130°
125°
BRITISH COLUMBIA

The Elsa Mine of United Keno Hill Mines Ltd. at Elsa, Yukon.



In the MacMillan Pass area, Pan Ocean drilled 10 000 m on the Jason lead-zinc-silver property (15) and geological reserves were increased. The company used wedges to give several intersections, at each drill set-up on the steeply dipping mineralized zones. The property is owned by the Ogilvie Joint Venture comprised of Pan Ocean Oil Ltd., Mitsubishi Metal Corp., Brinco Ltd. and Ventures West Capital Limited. On the adjacent Tom lead-zinc-silver property (15) Hudson Bay Exploration and Development Company Ltd. advanced its decline by 580 m and drifts by 343 m, and drilled 690 m. This $10 million underground exploration and development program will be terminated in April 1982 because of low metal prices. Future development will include 800 m of underground openings including a further 150 m advance of the decline. Also in the MacMillan Pass area, Canadian Nickel did soil geochemical sampling on the DUO claims (15) and Cominco continued working on its NIDD claim (14) group. AGIP Canada Ltd. mapped its NEVE claims (12).

In the Howard's Pass area, Placer Development Limited and Essex Minerals Co. continued underground exploration and development work in the shale-hosted stratiform XY lead-zinc deposit (16). A total of 457 m of drifting and 256 m of cross-cuts were advanced, while 960 m of drilling tested the continuity of mineralization. More drilling is planned for 1982.

Southeastern Yukon witnessed a considerable search for lead-zinc. Cyprus Anvil, on its large holdings in the Frances Lake area (20),conducted the ANMAC regional project over a wide area using conventional geological mapping, geophysics and geochemistry.

In the southeastern Yukon, Noranda Mines Limited and Asarco Inc. conducted electromagnetic (EM) and gravity surveys and drilled 610 m on the Quartz Lake lead-zinc-silver deposit (21). No new reserves were indicated. Some 35 km to the southeast of the Quartz Lake property in the Coal River area, Sulpetro Minerals Limited drill tested the southern extension of the MEL barite-lead-zinc deposit (22).

In addition, a zinc showing was discovered about 5 km east of the main MEL showing. On the east shore of Frances Lake (19), Cominco Ltd. attempted to find an extension of the known zone of lead-zinc-silver mineralization on the BARB claims optioned from Sovereign Metals. Cominco Ltd. also worked on its FIN claims (18), 32 km to the northwest. Archer, Cathro and Associates worked on the BAR claims (24) for Chevron where a barite horizon with associated quartz, pyrite and galena occurs between chert pebble conglomerate and chert of probable Devonian-Mississippian age. Logan Mines optioned the ROMAN claims (87), 10 km southeast of Watson Lake and geological mapping, geochemical and geophysical surveys were conducted. On the west side of Coal River (31), Archer, Cathro worked on the FYIQ claims where a lead-zinc-silver skarn has been found.

Working on shales of Helikian age, 164 km northeast of Mayo, Rio Tinto drilled 300 m on the CORD (4) claims. The holes encountered low grade lead-zinc intersections (less than 2 per cent combined).

North of Mayo in the Bonnet Plume area, Amax of Canada Ltd. tested the DOC claims on Mt. Profeit (5), where several pods of massive lead-zinc-silver mineralization in Hadrynian dolomite occur. Five holes totalling 686 m did not encounter significant intersections.

Amax Ltd. searched for shale hosted massive sulphide deposits in the Hess River area on the FAN claims (13) and near Mt. Cook, west of Ross River on the GREW claims (45).

Mattagami Lake Exploration conducted work northeast of Dawson on the RIKI claims and TAK claims (1). The company also investigated the FIONA claims, 82 km northwest of Mayo (6). In the south Richardson Mountains, Mattagami Lake Exploration worked on the TOUCHE claims (28) which cover zinc mineralization associated with a fault.

Northwest of Mayo, Mattagami worked on its DALE and MELA claims (3) where only minor lead-copper occurrences were found in Helikian phyllite.

A lead-zinc-silver skarn on the RAM claims (39) near Primrose Lake was evaluated by Canadian Nickel Company.

Amax of Canada Ltd. through its operator Cordilleran Engineering conducted geochemical and EM surveys and trenching and drilled 854 m on the MIDWAY zinc-lead-silver property (23), 96 km west of Watson Lake. The property [redacted], optioned from Regional Resources Ltd., is mainly in British Columbia, but extends into the Yukon. Drilling showed that the true width of the Discovery zone is 4.6 to 11 m with grades up to 9.3 per cent lead and zinc combined and 87.9 g per t silver. In 1981 over $1 million was expended on the property. Geological mapping, geochemical sampling and airborne electromagnetic survey work were conducted on the Yukon side of the property. In the same area, Amax and ProCan Explorations worked on the WOLF claims (23) in search of shale-hosted massive sulphides.

In the Quiet Lake area, Consolidated Occidental Petroleum Ltd. staked the MOX (29) claims to cover a copper-lead-zinc-silver skarn target on the margin of the Quiet Lake Batholith. Mineralization consists of chalcopyrite, galena and sphalerite in narrow discontinuous beds of calc-silicate-bearing marble.

Cominco Ltd. followed up work on its MICKEY claims (30), 59 km west-northwest of Dawson, and one diamond drill hole encountered lead-zinc mineralization with narrow sections grading up to 2 per cent lead-zinc combined.

Tungsten

Tungsten was a leading exploration commodity in 1981. In the MacMillan Pass area, Amax of Canada Limited continued its feasibility studies on the Mactung tungsten (15) property. The company announced proven and probable reserves of 13.6 million t averaging 1.02 per cent WO_3 out of total geological reserves/resources of 57 million t grading 0.95 per cent WO_3. The ore deposit straddles the Yukon-Northwest Territories border. The company is looking at a possible mine operation of 907 t of ore a day with initial production in 1984 or thereafter. A feasibility study on the $150 million project will be completed by the end of 1982 and a decision on production will be made subsequently.

Amax was also proceeding with a pre-feasibility study of Logtung Resources Ltd.'s Logjam Creek tungsten-molybdenum property (55), 120 km east of Teslin.

North of Mayo, in the Dublin Gulch area, Canada Tungsten Mining Corporation Ltd. continued evaluating its scheelite-bearing skarn deposit at Ray Gulch (37). A total of 11 280 m of diamond drilling in 61 fill-in definition holes substantiated the geological reserve of 7.3 million t grading 0.5 per cent WO_3, including 3.63 million t of 0.96 per cent $W0_3$. Noranda Mines Ltd. continued work on its RAIL claims (33), 35 km northwest of Dawson. Coarse grained calc-silicate-sulphide-scheelite contact skarn occurs as intermittent float and felsenmeer over a 61 m length along the northern contact of a quartz monzonite stock. Diamond drilling in 1980 showed the calcsilicatesulphidescheelite skarn to be up to 120 m thick. South of the Mayo area, Dupont drilled 396 m on the TWO BUTTES property (40). The holes intersected 10 to 15 m of skarn with assay values ranging from a trace to 0.1 per cent WO_3.

Southeast of Mayo, Union Carbide Canada Ltd. explored its Kalzas property, near Kalzas Twins, where mineralization consists of several one to 60 cm thick quartz-wolframite veins. The property is covered by the WOLF, PAT, DAVID and BLACKY claim groups (41).

Island Mining and Explorations Co. Ltd. conducted a diamond drilling program on the WAYNE claims (39) near Keno City, where high-grade tungsten values were intersected in a skarn.

South of Faro, Hudson Bay Exploration and Development continued work on the CAB property (45) optioned from Risby Tungsten Mines. A nine hole diamond drilling program of 2 200 m defined the extension of the No. 2 zone down dip. The zone consists of two scheelite-bearing skarn horizons lying between sedimentary rocks and a quartz monzonite stock. The lower and most persistent of the two horizons extends for a strike length of 660 m and vertical depth below outcrop of 350 m.

Northwest of Howard's Pass, the CLEA tungsten prospect (43) was the object of five diamond drill holes totalling 1 622 m by Placer Development.

In the south eastern Yukon, in the Rancheria area, Serem Ltd. worked several skarn properties including the URSUS (58), TEAM (53), CABIN (58), STONEAX, SOURCE (52) and LOOTZ (32) claim groups. Also in the Rancheria area, a joint venture of Amax, Pan Ocean and Serem drilled one hole totalling 549 m on the FIDDLER (57) scheelite-bearing skarn and associated base metal quartz veins.

Tungsten-bearing skarns were also investigated by Noranda Mines Ltd. on the ROSE claims (47) and Canadian Occidental Petroleum on the GOAT claims (56), and HATCH and THATCH claims (44). Archer, Cathro worked on five contact skarn properties in the southeastern corner of Yukon which include the SPORK (49), CREAM (47), VNER, SNEET and IVO (48) claims.

Gold-Silver

Lode gold deposits were sought by a number of companies, particularly in the western Yukon. On Freegold Mountain, Archer, Cathro and Associates worked the Rambler Hill rhyolite porphyry plug (69) for Arctic Red Resources Corp. The plug carries low values of gold and silver. Ten diamond drill holes were completed for a total of 1 193 m. Arctic Red Resources Corp. also rehabilitated the adit on the nearby Laforma vein (73) and the company plans to conduct underground exploration and development work in 1982. Noranda carried out minor trenching on the DART claims (73) which covers the old Emmons Hill gold-antimony quartz vein on Freegold Mountain. Northeast of Freegold Mountain, Silver Tusk Mines Ltd. continued underground exploration and development on the Tinta Hill silver-gold-zinc-lead property (74). A total of 973 m of drifts and cross cuts from two portals were developed exposing gold-silver-copper-lead-zinc bearing veins. Drill indicated geological reserves on one vein amount to 771 120 t. Archer, Cathro and Associates staked NITRO claims on the old Klazan property (72), southwest of Freegold Mountain and continued property work on the LILYPAD, NAT and KNUTE (71) claim group on Prospector Mountain where several high grade argentiferous veins occur in Mt. Nansen Group volcanics. BRX Mining and Petroleum Corp. trenched gold-silver-lead-bearing veins on the TAWA (89) claims west of Mt. Nansen. On Jubilee Mountain (76), southeast of Whitehorse, several diamond drill holes tested a previously known gold showing. Southwest of Whitehorse, in the Wheaton River area, AGIP Canada Ltd. worked the KUKU claims (75). In the Dawson area, Archer, Cathro conducted soil geochemical programs on the Lone Star property (65) for Dawson Eldorado Exploration. Archer, Cathro also sampled the TEFATJV claims (65). Northwest of Carmacks, Hudson Bay Exploration and Development drilled six holes totalling 812 m to test EM anomalies on the Sonora Gulch option (70).

In the Aussie Creek area, 90 km east of Dawson (66), Rio Tinto sampled a gold-bearing zone on the IDA claims. The company also did work on a gold target in the STROKER claims (68), 85 km north of Mayo.

Silver (Lead, Zinc)
Prism Resources Ltd. and other joint-venture companies continued underground exploration and drilling of the silver-lead-zinc VERA (Rusty Mountain) property (26), 112 km northeast of Mayo, in the Kathleen Lakes area. During 1981, extensive diamond drilling and underground development work provided a data base from which indicated reserves are estimated at 864 000 t grading to 684.3 g per t silver and 3 to 4 per cent combined lead and zinc. Existing reserves come from the Vera East, Vera West and South Zone 5 and the Siltstone showing. Expenditures in 1981 amount to $2.5 million.

North of Mayo, 110 km, Archer, Cathro and Associates staked the BLENDE claims (67), over a silver-lead-zinc vein in Proterozoic dolomite. The vein is over 900 m long and gave high-grade silver assays. United Keno Hill Mines Ltd. completed 10 471 m of overburden drilling and 1 946 m of diamond drilling in three areas on Keno Hill (d) and seven areas on Galena Hill, both near Keno City. In addition, 923 m of underground diamond drilling was carried out at the Keno, No Cash and Ruby mines. Surface stripping conducted out on the Bermingham vein, Miller vein and Calumet 4 and 11 veins. Canada Tungsten Mining Corp. investigated several properties in the Keno Hill area, including the Gold Hill claim and the Mount Keno Mines property (69) where significant vein structures were outlined. On the ZAP claims, the company drilled holes totalling 366 m on a vein fault breccia (69). In total, Canada Tungsten drilled 1 828 m of over-burden drilling and 1 371 m of diamond drilling in the Keno Hill area.

In the southeastern Yukon, Canadian Occidental Petroleum Ltd. worked on the LICK claims (78) where lead-zinc mineralization has been found in shear zones in granitic rocks. North of Watson Lake, Cima Resources Ltd. drilled the Mt. Hundere property (79) to confirm the eastern continuation of known zinc-lead-silver mineralization.

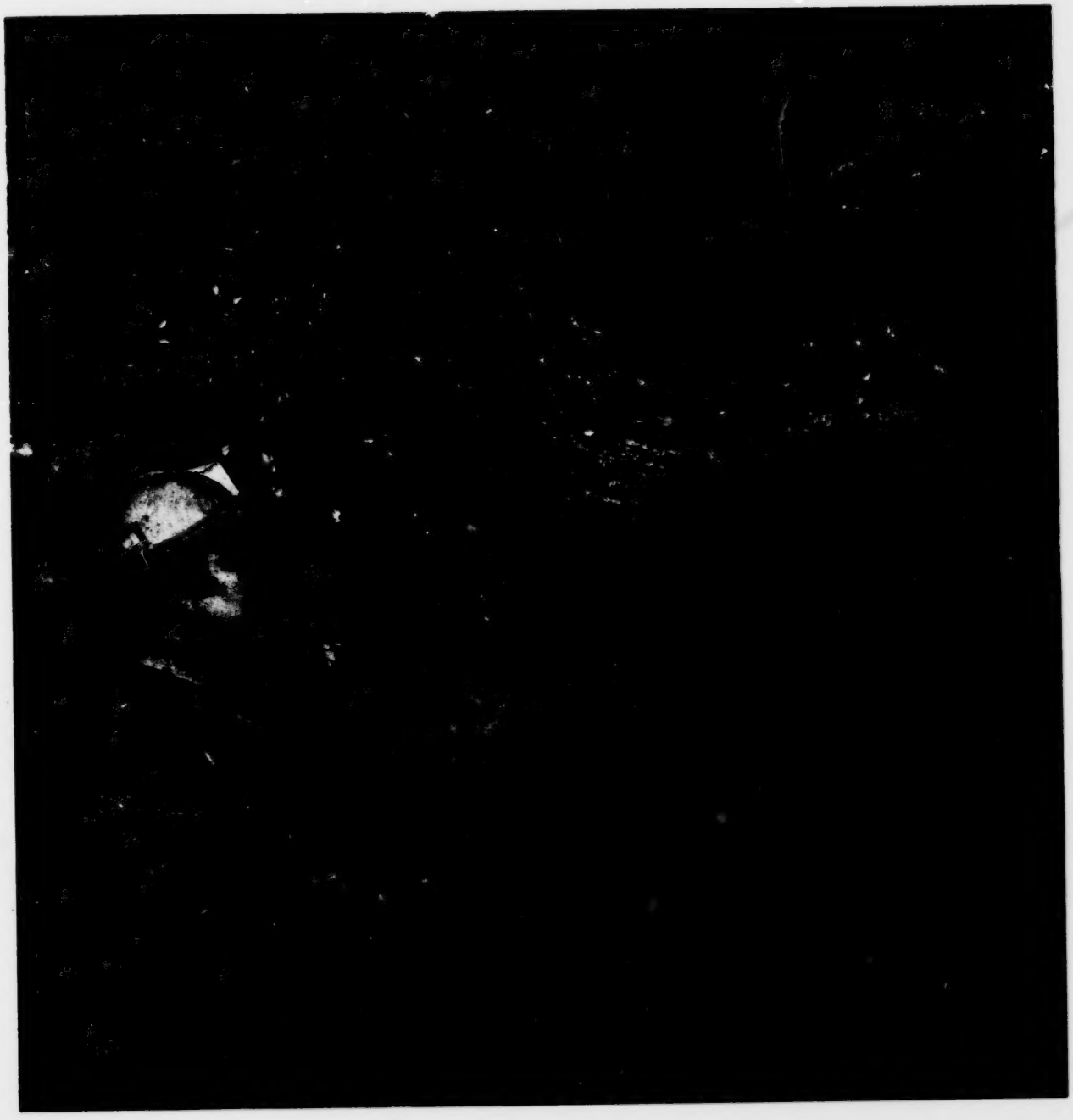
Turner Energy and Resources completed soil geochemical sampling and an electromagnetic survey of its property on Rambler Hill (69) adjacent to the United Keno Hill Mines Ltd. mine.

Copper
The search for copper in 1981 was minor. United Keno Hill Mines Ltd. continued work on several properties west of Carmacks including the STU (81), PHIL, MOON, DEATH, DAD, HI and NOON claims where an airborne electromagnetic, and ground geochemical surveys were conducted. Esso Minerals investigated a massive pyritic sulphide body on the JULIA claims (82), 140 km southeast of Ross River. Mattagami Lake Exploration continued work on the MARN skarn (80) 55 km north-northeast of Dawson where copper-silver-gold values have been encountered in a diopside amphibolite skarn. Minor geological mapping and 1 000 m of diamond drilling were conducted. More drilling will be conducted in 1982.

B.A. Copper Mines conducted preliminary geological mapping and soil geochemical sampling on the TOWER claims near Big Salmon Lake (90). Cima Resources mapped and drilled three holes on its PIKE claims, 80 km northeast of Ross River (91), where 300 000 t grading 0.5 per cent copper and 62.2 g per t silver is indicated.

Molybdenum
Amoco Canada Petroleum Co. Ltd. and Tintina Mines Limited continued drilling on the Red Mountain molybdenum property (50), 50 km east of Whitehorse. Six holes totalling 3 963 m were completed. Reserve calculations during 1981 indicate 22.4 million t grading 0.307 per cent MoS_2 at a cut-off grade of 0.25 per cent MoS_2 with larger tonnages at lower grades. On the PLUTO property, 54 km west-northwest of Dawson (34), Cominco and Getty Mines drilled eleven diamond drill holes, totalling 1 988 m which gave intersections of low grade molybdenum (0.02 to 0.05 per cent Mo) and erratic tungsten values.

Underground photo showing a galena-carbonate vein at the Elsa Mine of United Keno Hill Mines Ltd.



In the Frances Lake area, Union Carbide carried out geological mapping and rock geochemical sampling on the RENA claims (46). In the Arrowhead Lake area of the Hess Mountains, AGIP Canada Ltd worked on the ICE, FIRE and SUN claims (42) which cover a Cretaceous syenite intrusion containing extensive zones of thin veins bearing minor pyrrhotite, chalcopyrite, scheelite, molybdenite and arsenopyrite.

Tin

In the Rancheria area, southern Yukon, holes drilled on the SIN claims (54) by the DC Syndicate and on the JC property (59) by Cominco Ltd. were not successful in defining significant tin mineralization. Dupont of Canada Exploration Ltd. drilled 6 holes totalling about 1 200 m on the DU and SWIFT claims (54) in the Rancheria area, but only low tin values were encountered. North of Teslin, Newmont drilled 9 holes on the MINDY claims (51) for a total of 1 047 m. Tin minerals occur with zinc, tungsten and copper minerals in skarn.

In the Mayo area, the Cortin Joint Venture of Billiton Canada Ltd., Canadian Nickel Co. Ltd. and Campbell Resources Inc. drilled eight holes totalling 1 524 m on the EPD claims (36). Drill intersections exceeding one per cent tin over widths in excess of one m were reported. In addition, geological mapping and soil geochemical sampling programs were conducted on the JOUMBIRA, MAHTIN, SNARK and BANDER claim (35) groups. Geological mapping was also done on the JABBERWOCK claims (38).

Uranium

Uranium exploration was at a low level in 1981. Archer, Cathro and Associates worked on several properties in the Wernecke Mountains, all associated with diatreme breccias in Helikian sedimentary rocks. They include the BOND (63), FACE (61), PIKE (61) and PTERD (62) claims. Texaco Canada Resources in joint venture with Zelon Enterprises worked on the HAIL, IOTA, IRON, etc. claims (60) in the Wernecke Mountains where the target for prospecting was uranium associated with breccia diatremes. Northeast of Whitehorse (64), AGIP Canada Ltd. conducted geological, geochemical and geophysical surveys on the GAMMON claims.

Barite

In the MacMillan Pass area, Yukon Barite Company Limited drilled the TEA barite (85) deposits and bulk sampled outcrops of barite. The company hopes to put the property into production in 1982. The design plant has a capacity of 40 000 t per year and development is estimated to cost approximately $2 million.

Asbestos

Asbestos exploration was restricted to work conducted by Archer, Cathro and Associates in the Clinton Creek area on the TARTZHART, TOADSTEAK, TATER, TURK, TIZA, and TJOP claims (83). Brinco Mining Ltd. in joint venture with Cominco Ltd. and Exploram explored for asbestos in the Clinton Creek area. Golden Gate Explorations conducted a small drilling program on the REX claims (88) near Haines Junction.

Coal

In late 1981, Sulpetro Minerals Ltd. drilled five holes totalling 718 m in the Rock River area, 120 km northeast of Watson Lake (86). The intersections of subbituminous coal and lignite indicated a significant coal deposit which is suitable for thermal generation of electricity.

Northwest Territories

Mining Production and Development

Metallic mineral production in the Northwest Territories during 1981 was valued at $456.4 million compared to $435 million in 1980. Production came from nine mining establishments that produce zinc, lead, tungsten, gold and silver. Lead and zinc production accounted for 73 per cent of production value, while gold accounted for 14 per cent and tungsten 9 per cent. The mines are Canada Tungsten Mining Corporation (tungsten); Camlaren Mines Ltd. (gold); Cominco Ltd.'s Con Mine (gold, silver); Cullaton Lake Gold Mines Ltd. (gold, silver); Echo Bay Mines Ltd. (silver, copper); Giant Yellowknife Mines Ltd. (gold, silver); Nanisivik Mines Ltd. (zinc, lead, silver); Pine Point Mines Ltd. (zinc, lead); and Terra Mining and Exploration Ltd. (silver, copper).

The Northwest Territories accounted for 100 per cent of the tungsten, 23.8 per cent of the lead, 22.5 per cent of the zinc, 7.4 per cent of the gold and 3.1 per cent of the silver produced in Canada. In 1981 the Northwest Territories accounted for 4.9 per cent of Canadian metallic mineral production.

There were 2 085 persons employed by the producing mines or 9.2 per cent of the Northwest Territories' work force.

Mining in the Northwest Territories continued to expand with the start of production from the Cullaton Lake gold mine (h) in October 1981. Four mines are scheduled to commence production in 1982. They are Cominco Ltd.'s Polaris zinc-lead mine (i), and Ptarmigan gold mine (72); Echo Bay Mines Ltd.'s Lupin gold mine (66) and Cadillac Explorations Ltd.'s Prairie Creek silver-lead-zinc mine (103). These developments will more than offset the closing of Echo Bay Mines' silver operation at Port Radium (e) in 1982 and the closing of the short-lived Camlaren gold mine (g) in 1981. In addition lead-zinc production in the Territories will increase about 50 per cent while gold production will nearly double.

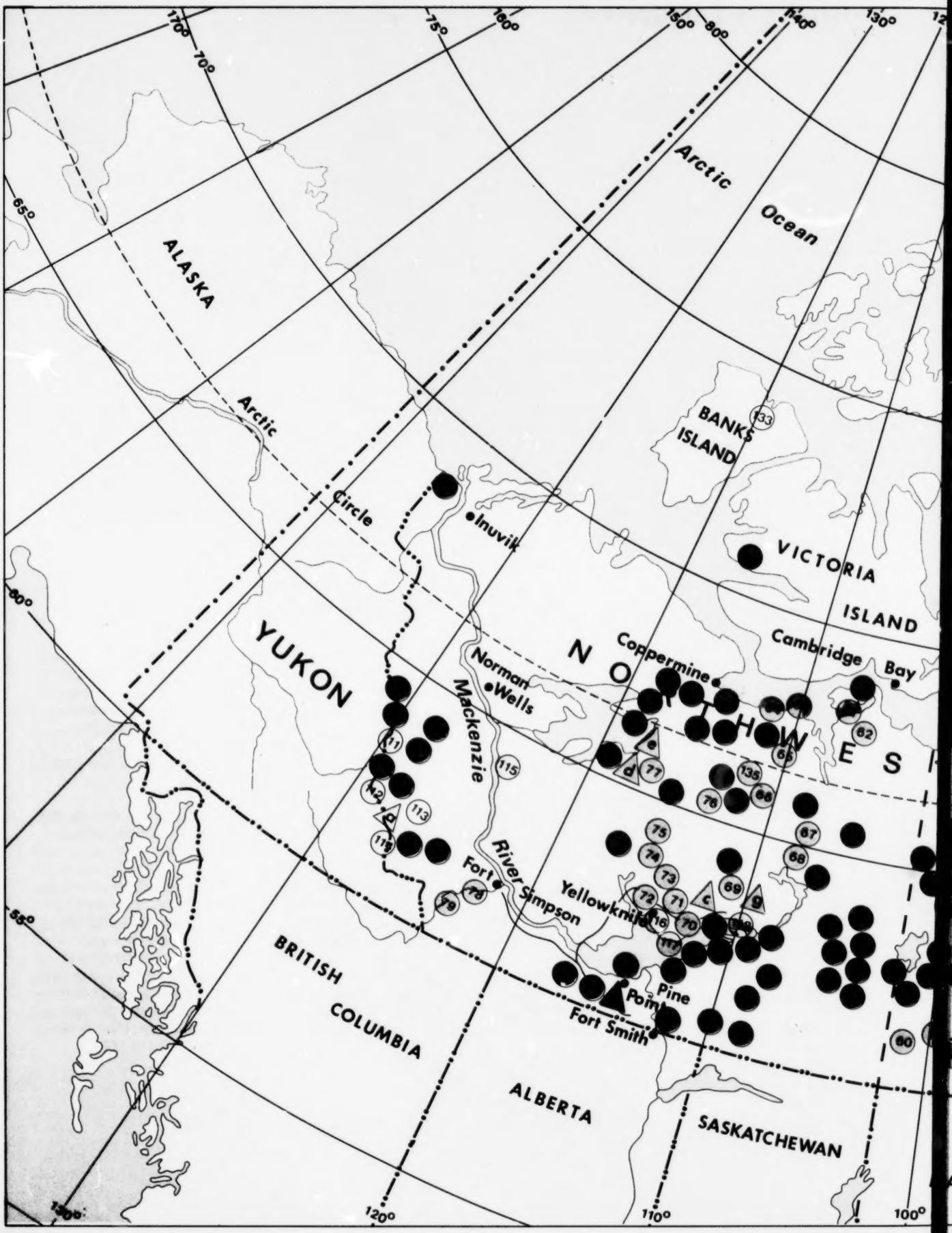
The new mine developments are lead by Cominco Ltd.'s Polaris zinc-lead mine on Little Cornwallis Island in the High Arctic. The $160 million development is expected to produce 187 000 t of zinc concentrate and 42 000 t of lead concentrate a year by the mid-1980s. The mill was turned over in November 1981 and production was expected to commence in January 1982. The performance of the Polaris mine will be watched with great interest, for although isolated by frozen seas, the economics of ocean shipping during a short navigation period from this world-scale deposit offers the prospect of efficient and profitable mining in the High Arctic.

Another major project is the $128 million Lupin gold mine of Echo Bay Mines Ltd. at Contwoyto Lake (66), 300 km east of Port Radium. Production is expected to start in July 1982. A major airlift of equipment to the property and extensive construction and underground development took place during the year. Initial milling capacity is 900 t a day. Proven and probable reserves estimated at 2.4 million t grading 12 g per t (0.35 oz).

Cadillac Explorations Ltd. is in the pre-production phase of development at its Prairie Creek silver-lead-zinc mine in the Nahanni District (103). The $40 million project is scheduled for production during the second quarter of 1982. Proven and probable reserves are estimated at 3.4 million t with an average grade of about 260 g (7.5 oz) per t of silver, 12.5 per cent lead, 15 per cent zinc and 0.9 per cent copper.

Cominco Ltd.'s Con Mine is developing the 90 t per day Ptarmigan gold mine near Yellowknife for production in early 1982.

During 1981, Giant Yellowknife Mines Ltd. commenced its $7.2 million underground exploration program on its Salmita gold property on Mackay Lake (69), 225 km northeast of Yellowknife. The company intends to confirm indicated reserves of 135 000 t containing an average of 21.66 g per t of gold. The program includes establishing a decline 100 m below surface and opening the gold-bearing zone on two levels and drilling from underground locations. Camp construction and extension to the airstrip were completed in 1981.


ALASKA
Arctic Ocean
Arctic Circle
BANKS ISLAND
VICTORIA ISLAND
Inuvik
Cambridge Bay
Coppermine
Norman Wells
YUKON
NORTHWEST
Mackenzie River
Fort Simpson
Yellowknife
Pine Point
Fort Smith
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
170°
160°
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120°
110°
100°
75°
70°
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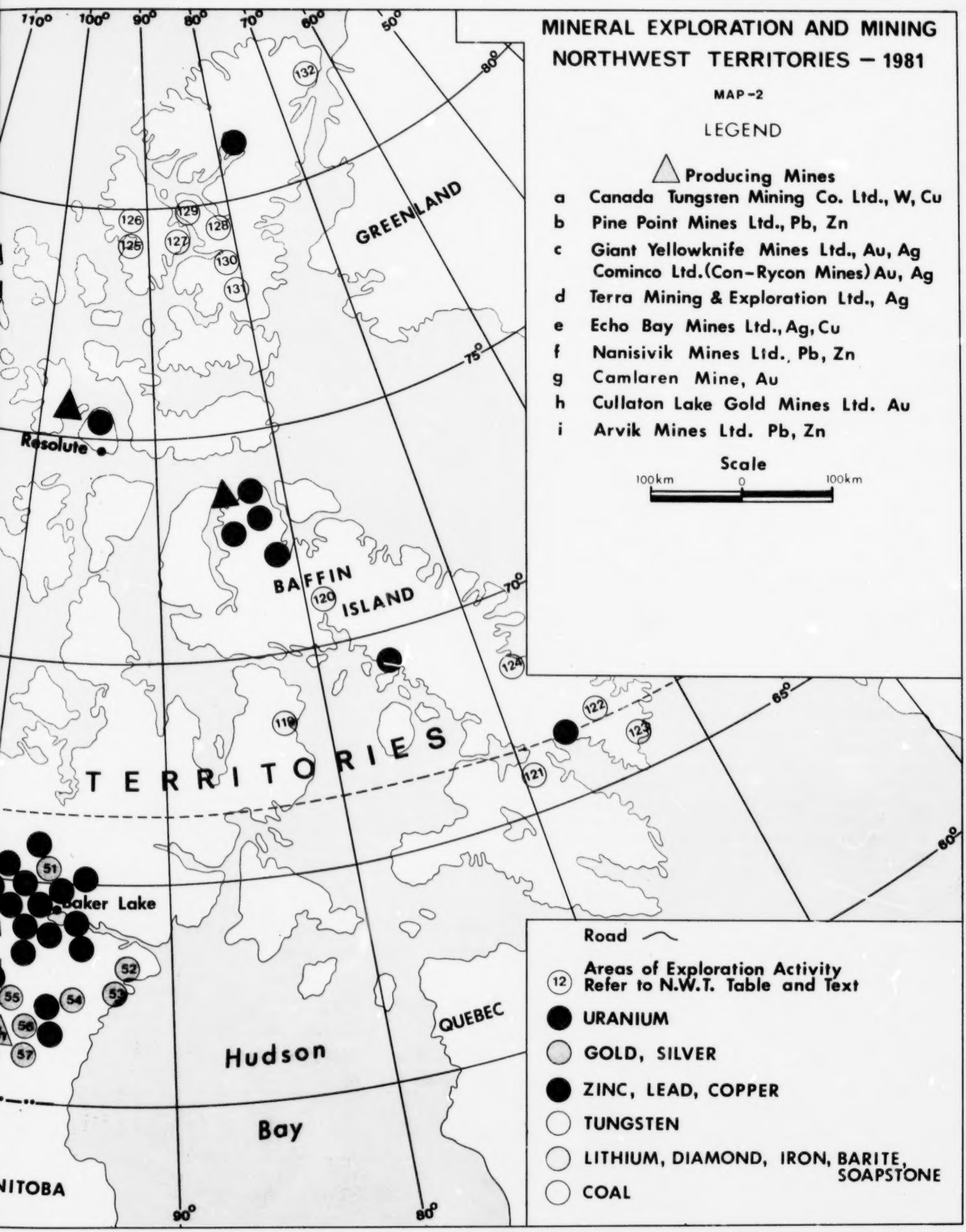
60°
55°


MINERAL EXPLORATION AND MINING
NORTHWEST TERRITORIES – 1981
MAP-2
LEGEND
Producing Mines
a Canada Tungsten Mining Co. Ltd., W, Cu
b Pine Point Mines Ltd., Pb, Zn
c Giant Yellowknife Mines Ltd., Au, Ag
Cominco Ltd.(Con-Rycon Mines) Au, Ag
d Terra Mining & Exploration Ltd., Ag
e Echo Bay Mines Ltd., Ag, Cu
f Nanisivik Mines Ltd., Pb, Zn
g Camlaren Mine, Au
h Cullaton Lake Gold Mines Ltd. Au
i Arvik Mines Ltd. Pb, Zn
Scale
100km 0 100km
GREENLAND
BAFFIN ISLAND
Resolute
Baker Lake
QUEBEC
Hudson Bay
TERRITORIES
NITOBA
Road
Areas of Exploration Activity
Refer to N.W.T. Table and Text
URANIUM
GOLD, SILVER
ZINC, LEAD, COPPER
TUNGSTEN
LITHIUM, DIAMOND, IRON, BARITE, SOAPSTONE
COAL

Noranda Mines Limited
In 1980 Noranda Mines Limited and its subsidiary Pamour Porcupine Mines Limited reopened the Camlaren gold property on Muir Island, Gordon Lake (g). The property was leased from Discovery Mines Ltd. and Camlaren Mines Ltd. The 135 t per day mine and mill operation was closed in October 1981 because of poor metal prices. During the year the mill processed 35 950 t of ore to produce a concentrate containing 515.2 kg (16 024 oz) of gold and 127.4 kg (3 964 oz) of silver.

Type:	Underground
Location:	100 km northeast of Yellowknife
Product:	Gold, silver
Mill Rate:	143 t per day
Tonnes Milled:	39 950 t
Reserves:	Nil
Employees:	51

Canada Tungsten Mining Corporation
Canada Tungsten Mining Corporation's Cantung Mine (a) milled 214 633 t of ore to produce 2 155 180 kg of WO_3 in 1981, a decrease of 54 per cent from 1980. The production decline resulted from a labour strike which extended from November 14, 1980 to May 14, 1981. The company was able to supply its customers until February 4, 1981 but had to declare "force majeure" on further deliveries when supplies were depleted. Operations returned to normal in mid-June.

Type:	Underground
Location:	Tungsten
Product:	Tungsten in scheelite concentrate
Mill Rate:	768 t per day
Tonnes Milled:	214 633
Reserves:	3 220 000 t (Dec. 31, 1981)
Reserve Grade:	1.50 % tungsten trioxide (WO_3)
Employees:	229

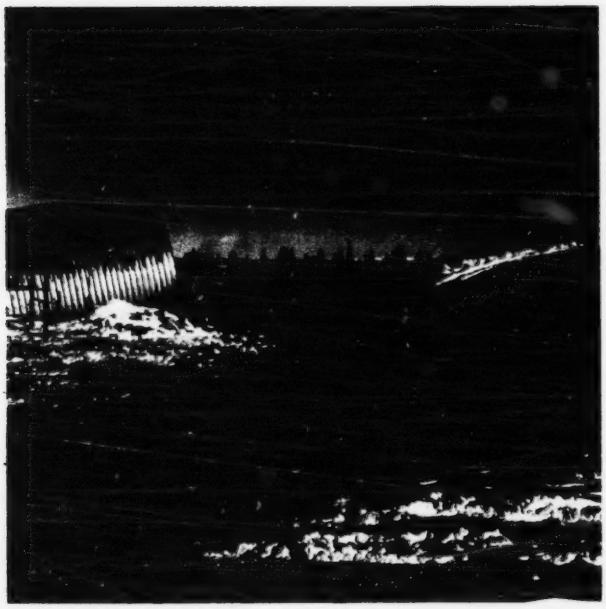
Cominco Limited — Con Mine
Cominco Ltd.'s Con Mine (c) milled 176 085 t of ore to produce 2 326 kg of gold and 465 kg of silver. The mine lost about one and a half months production because of a strike.

Type:	Underground
Location:	2.4 km south of Yellowknife
Product:	Gold, silver
Mill Rate:	494 t per day
Tonnes Milled:	176 085
Reserves:	1 900 000 t (Dec. 31, 1981)
Reserve Grade:	16.8 g gold per t
Employees:	350

Cullaton Lake Gold Mines Limited
Cullaton Lake Gold Mines' $26.5 million joint venture mine controlled by Consolidated Durham Mines and Resources Limited and O'Brien Energy and Resources Limited commenced production in the Cullaton Lake area (h) in November 1981. The mine is located 402 km northwest of Churchill, Manitoba. A major airlift of equipment to the property and extensive construction and underground development took place during the year. The "B" Zone ore deposit was developed by driving a spiral ramp to the 122 m vertical horizon and by developing levels and stopes. The 300 t per day mill, following start up in November, processed 8 666 t of ore in 1981 and produced 11.6 kg of gold and 141.5 g of silver.

Type:	Underground
Location:	Cullaton Lake area, Keewatin District
Product:	Gold, silver
Mill Rate:	141 t per day
Tonnes Milled:	8 666
Reserves:	277 603 t (Aug. 1980)
Reserve Grade:	25.0 g per t
Employees:	57

The portal of the decline ramp at Cullaton Lake Gold Mines' mine in the District of Keewatin.



Echo Bay Mines Limited
Echo Bay Mines continued production from the Eldorado, Contact Lake and Edgar No. 1 mines at Port Radium (e). The mill processed 38 333 t of ore to produce 34 935 kg (1 123 201 oz) of silver and 317 t of copper contained in concentrate. The silver mining operations were terminated in December 1981 because of depressed silver prices and near exhaustion of ore reserves, but milling will continue until March 1982.

Type:	Underground
Location:	Port Radium
Product:	Silver, copper
Mill Rate:	109 t per day
Tonnes Milled:	38 333
Reserves:	Nil (Dec. 31, 1981)
Employees:	107

Giant Yellowknife Mines Limited
Giant Yellowknife Mines Ltd. (c) continued to produce ore from its Giant underground and open pit mine, and adjacent Lolor and Supercrest underground mines. Production during 1981 amounted to 1 645.9 kg (53 033 oz) of gold and 211.5 kg (6 800 oz) of silver from 358 233 t of ore milled. The average grade of ore milled decreased from 6.5 g in 1980 to 5.47 g in 1981. Exploration activity within the vicinity of the mine continued with the main effort being near the Supercrest shaft and main production zones. The company completed a surface silo and truck loadout facility for arsenic trioxide during the year and 1 094 t of As_2O_3 was produced from cleaned precipitator off-gases.

Type:	Underground
Location:	2.4 km north of Yellowknife
Product:	Gold, silver, arsenic
Mill Rate:	980 t per day
Tonnes Milled:	358 233
Reserves:	1 095 898 t (Dec. 31, 1981)
Reserve Grade:	8.23 g per t
Employees:	374

Nanisivik Mines Limited
Nanisivik Mines Limited (f) milled 624 275 t of ore in 1981 to produce 67 976 t of zinc contained in 119 592 t of concentrate and 8 234 t of lead contained in 11 056 t of lead concentrate. The zinc concentrate contained an average of 245.3 g per t of silver; the lead concentrate contained 52.8 g per t of silver.

Type:	Underground
Location:	29 km northeast of Arctic Bay, Baffin Island
Product:	Zinc, lead, silver, cadmium
Mill Rate:	1 524 t per day
Tonnes Milled:	624 275
Reserves:	4 539 300 t (Dec. 31, 1981)
Reserve Grade:	4.3% lead, 6.6% zinc
Employees:	192

Pine Point Mines Limited
Pine Point Mines Limited (b) continued to mine from various open pits. The Pine Point mill processed 3 381 500 t of ore during the year, to produce 145 518 t of zinc contained in 248 960 t of zinc concentrate and 60 515 t of lead in 78 428 t of lead concentrate. During 1981 the company located a new ore deposit containing 0.9 million t of 20 per cent combined lead and zinc.

Type:	Open-pit
Location:	Pine Point
Product:	Lead, zinc
Mill Rate:	9 069 t per day
Tonnes Milled:	3 381 500
Reserves:	37.5 million t (Dec. 31, 1981)
Reserve Grade:	1.9 % lead, 5.4% zinc
Employees:	635

Terra Mining and Exploration Limited
Terra Mining and Exploration Limited (d) terminated mine and mill operations at its Silver Bear Mine in February 1981. During the year an underground development program and extensive drilling program at the Silver Bear Mine indicated new ore reserves, while a surface diamond drilling program confirmed the existence of seven silver-bearing veins in the Norex – Smallwood Mine area, 9.7 km from the Silver Bear Mine. The company plans to continue exploration and development and resume mining and milling operations in 1982. In 1981, the mill processed 1 565 t of ore to produce 1 815 kg of silver and 10 590 kg of copper.

Type:	Underground
Location:	15 km south of Great Bear Lake, Camsell River district
Product:	Silver, copper
Mill Rate:	138 tonnes a day
Tonnes Milled:	1 565
Reserves:	39 900 t (Dec. 31, 1981)
Reserve Grade:	1 783 g silver per t
Employees:	90

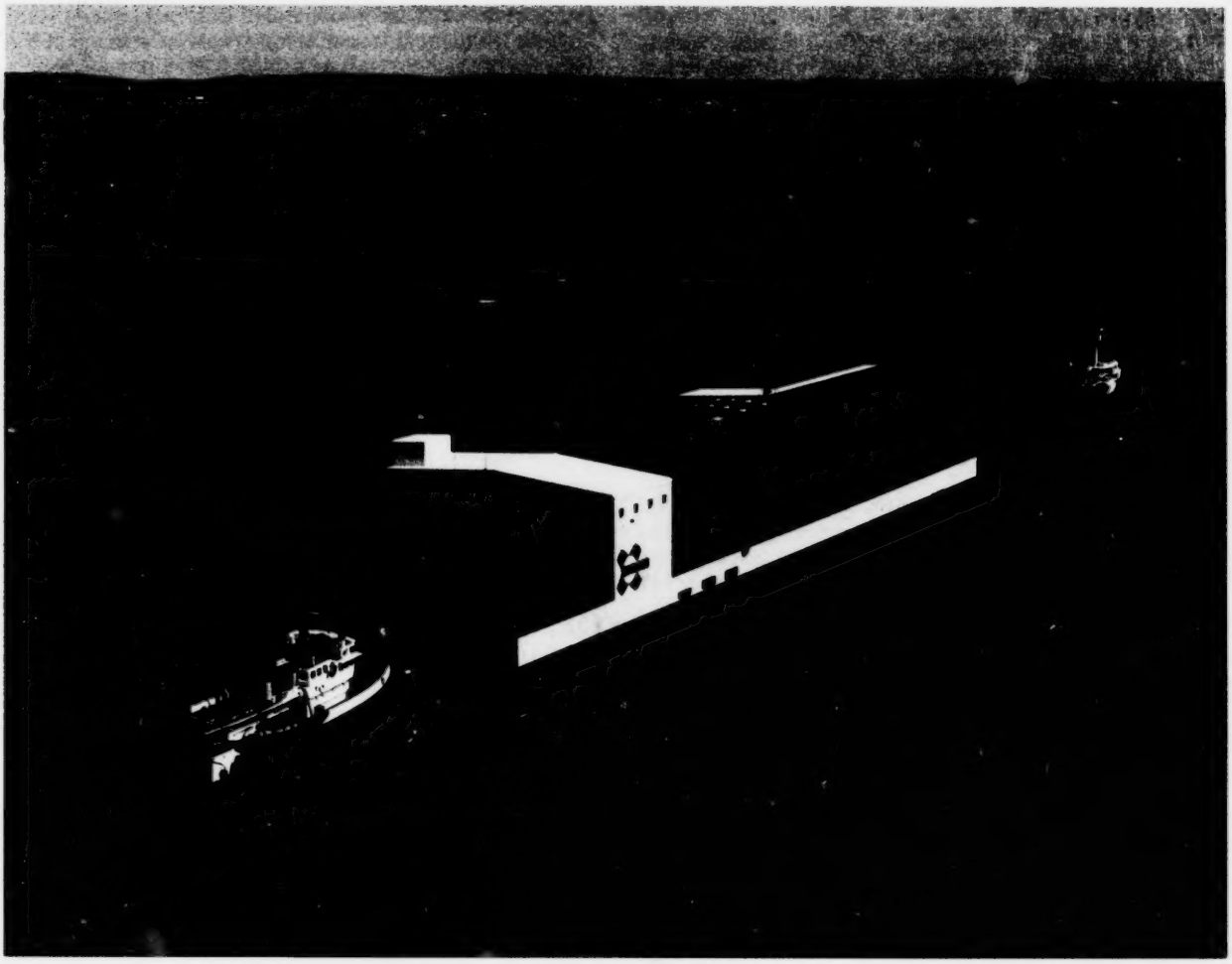
Mineral Exploration

Prospecting permits in the Northwest Territories issued during 1981 declined to 73 from 98 in the previous year. Similarly, mineral claims staked and recorded declined to 1 041 in 1981 from 1 331 in 1980. The distribution of claims recorded by district for both years is as follows:

	1981		1980	
Districts	*Claims Recorded*	*Area (Hectares)*	*Claims Recorded*	*Area (Hectares)*
Mackenzie	539	282 202	487	306 633
Arctic and Hudson Bay	479	381 515	773	534 552
Nahanni (Cordillera)	23	8 726	71	25 244
Total	1 041	672 442	1 331	866 429

Exploration expenditures in 1981 are estimated at approximately $50 million. Total surface diamond drilling amounted to more than 175 306 m. Exploration was principally directed to discovery of uranium, gold and base metal deposits. The number of properties explored in 1981 was 214, up from 164 explored in 1980 and 162 in 1979.

Arvik II, the barge mounted mill-concentrator complex built at Trois Rivieres, Québec, is shown here on the St. Lawrence River at the start of its voyage to Little Cornwallis Island on July 24, 1981.



Uranium exploration accounted for 84 exploration projects, which were conducted in Proterozoic regions including the Bear Province, the Thelon-Dubawnt-Baker Lake-Amer Lake region, Nonacho basin and East Arm Great Slave Lake fold belt.

Exploration for gold in veins, shear zones and iron formations continued to be concentrated in Slave Province and the Kaminak-Rankin Subprovince. Known gold-bearing quartz veins in Slave Province on the Ptarmigan (72), Salmita (66), Bullmoose Lake/TA (70), Ruth (70), Diversified/Arseno (75), North Inca (75) and Arcadia (64) properties were explored.

Base metal exploration continued at a respectable level in 1981. Additional lead-zinc reserves were found in the Pine Point District (100) where 87 250 m of diamond drilling were completed. Volcanogenic base metal-silver deposits were also the object of exploration in the Kaminak-Rankin volcanic belt (90) and in Slave Province. In Nahanni District, tungsten skarn and shale-hosted lead-zinc targets along the Yukon-Northwest Territories border were the main focus of activity. In the Arctic Islands, the search for Mississippi Valley type lead-zinc deposits continued and companies acquired coal exploration licences on Ellesmere Island and Axel Heiberg Island.

Surface Diamond Drilling in N.W.T.*

				Projects with more than 20 holes	
	No. of Projects	Total Holes	Total Meters	No. of Projects	Meters
Cordilleran (Nahanni District)	7	61	3 561	1	3 082
Pine Point District, Slave Lowland (Interior Plains)	4	1 107	87 250	4	87 250
Arctic Islands	1	29	3 297	1	3 297
Keewatin (Churchill Province)	7	106	14 960	1	7 967
Southeast Mackenzie District (Churchill Province)	3	10	4 478	1	3 144
East Arm Great Slave Lake Subprovince			2		
Bear Province	13	219	32 014	4	29 118
Slave Province	21	210	29 746	3	14 194
TOTAL	58	1 852	175 306	15	148 052

* *Data includes drilling reported to October 30, 1981.*

A summary of mining exploration activities is given in Table III. The locations of the exploration activities are shown by numbers in Map 2.

Uranium

In the Thelon-Dubawnt-Baker Lake-Amer Lake region, 24 companies were active in uranium exploration. Work included airborne gamma spectrometer, electromagnetic and magnetic surveys and ground geological, geophysical, geochemical and prospecting surveys.

Urangesellschaft Canada Ltd. explored in detail the main grid on the Lone Gull property (14) and conducted exploration in the Thirty Mile Lake area (18), Nowleye Lake area (22), Sand Lake area and claims west of Baker Lake (4) and south of Schultz Lake (13). Diamond drilling will be undertaken in 1982 on the company's Lone Gull property, on an adjacent property and on the Sand Lake property (10).

West of Yathkyed lake, 8 000 m was drilled to probe uranium showings and geophysical anomalies on the YU 1-36 claims (20). This project is a joint venture of Pan Ocean Oil Ltd., Noranda Exploration Company Ltd. and AGIP Canada Ltd., with Pan Ocean acting as operator. Pan Ocean also worked in the Bissett Lake (16) and Kazan River (17) areas. BP Minerals Ltd. drilled 1 560 m to test anomalies on its leases south of Schultz Lake (5). Marline Oil Corporation drilled approximately 1 000 m on its claims southeast of Aberdeen Lake (13). Uranerz Exploration and Mining Ltd. drilled 700 m on its claims south of Amer Lake (1). Cominco Ltd. explored its claims east of Aberdeen Lake (13) with approximately 1 000 m of diamond drilling.

Other companies which carried out conventional uranium exploration activities include Noranda Exploration Company Ltd. on its claims south east of Bissett Lake (16); Phillips Petroleum on its permits south of Baker Lake (15); Comaplex Resources International Ltd. on its permits west of Forde Lake (18) and south of Judge Sissons Lake (14); AGIP Canada Ltd. on permits held jointly with Noranda Exploration Company Ltd. northwest of Tulemalu Lake (19), north and west of Carruthers Lake (21) and north of Kamilukuak Lake (23); Union Oil Company of Canada Ltd. on its prospecting permits north and west of Tulemalu Lake (19), south of Garry Lakes (7), west of Sand Lake (8) and south of Amer Lake (1); Anaconda Canada Exploration Ltd. on its claims northwest of Marjorie Lake (12); Seru Nucléaire (Canada) Ltée. on permits and claims southwest and northwest of Tehek Lake (2), south of Deep Rose Lake (6) and north of Beverly Lake (12); Eldorado Nuclear Ltd. in the Baker Lake (5) area; Essex Minerals Company at Rumble Lake (5); Westmin Resources Ltd. on its claims and permits north at Aberdeen Lake (10), and extending northeast from the Thelon game sanctuary to Amer Lake (1); Canadian Nickel Company on its claims northeast of Sand Lake (10); Mobile Energy Minerals Ltd. on claims near Sand Lake (8) and west of Schultz Lake (5); and Texasgulf Inc. on its prospecting permits north of Garry Lakes (7) and east of Consul River (9).

In the southwest Thelon Plain, Gulf Canada Resources Ltd. drilled geophysical targets near "L" Lake (27). Urangesellschaft Canada Ltd. (28), Hudson Bay Minerals Ltd. (29), Texasgulf Inc. (25) and Canadian Nickel Co. Ltd. (Canico) (27) explored their permit areas and claims. PNC Explorations (Canada) Ltd. conducted airborne geophysical and reconnaissance geological and geochemical surveys on its permits in the Foster Lake – Croft Lake area (24). Exploration programs to examine recent permit acquisitions were conducted by Seru Nucléaire (Canada)Ltée. southwest of Sid Lake (30), Anaconda Ltd. near Mantic Lake (25), and Union Oil Ltd. near Beaverhill Lake (26) and Gravel Hill Lake (25).

In the Nonacho Lake region, PNC Exploration (Canada) Ltd. drilled over 3 000 m near the south end of Thekulthili Lake (34) and the program will be continued in 1982. Esso Minerals Canada drilled five holes on the CRIS claims (35) near the junction of the Talston and Tethul Rivers.

Other companies which carried out conventional uranium exploration activities in the Nonacho Lake region include Uranerz Exploration and Mining Ltd. in the Powder Lake area (32) and Trigg, Woollett and Associates Ltd. in the Nonacho Lake area (31).

In the East Arm of Great Slave Lake Subprovince, Scurry Rainbow Oil Ltd. drilled a uranium prospect on the PD claims, on the northeast end of Union Island (37) and explored several claim groups from its Basile Bay camp (38). Chevron Standard did geophysical work on the SHUM claims (38). Reconnaissance uranium surveys were conducted by Woodcock Consultants and Minequest (37), Anaconda Canada Exploration Ltd. (39) and Gulf Canada Resources (36) and (39).

In Bear Province, Chevron Standard Ltd. drilled the WOP claims at Deep Lake (50). AGIP Canada Ltd. drilled its Leith Peninsula properties, near Great Bear Lake (49). Esso Resources Canada Ltd. drilled the WD claims on the west end of Dismal Lakes, Coppermine region (46). BP Minerals Limited explored the TIM and RAD claims south of the Dismal Lakes by geophysical surveys and drilled the TIM property (45). BP Minerals in joint venture with Union Carbide Ltd. drilled showings on the PAT claims, south of the Coppermine River (44). Uranerz Exploration and Mining Ltd. drilled on an island in the Asiak River (43) and on the GL claims (42). Phillips Petroleum Company and Western Hemisphere Ltd. explored their prospecting permits (47), on the Hornby Bay and Dismal Lake Groups.

Eldorado Nuclear Ltd. under agreement with Giant Yellowknife Mines Ltd. explored Giant's property at the southeastern end of the Bathurst Trench (40) by geological mapping and geophysical surveys. Noranda Exploration Ltd. examined an area on the Kent Peninsula (41).

Lead-Zinc-Copper-Silver

In the Pine Point District, Pine Point Mines Ltd. (100) completed approximately 60 000 m of diamond drilling in search for Mississippi Valley type lead-zinc deposits. A new orebody containing about 0.9 million t of 20 percent combined lead and zinc was discovered. Large drilling programs were also conducted by Westmin Resources Ltd. on its Great Slave Reef Project (101) and Cominco Ltd. on its Hay West Project (102).

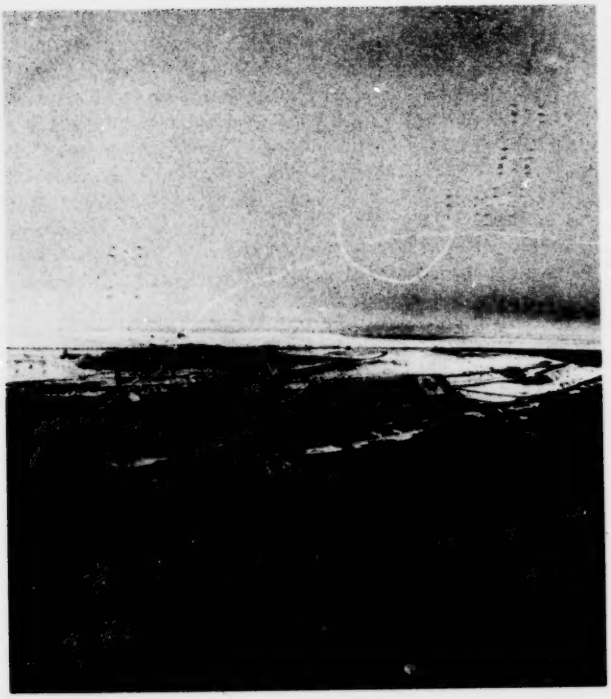
In the East Arm of Great Slave Lake Subprovince, Giant Yellowknife Mines Ltd. explored for copper in the Maufelly Point area (99) near Fort Reliance.

In Slave Province, Cominco Ltd. drilled the west end of the A-zone massive sulphide deposit on the Bathurst Norsemines property (92) where additional mineralization was encountered. Texasgulf Inc. drilled sulphide deposits near Amoogabooga Lake (94) and targets on ground optioned from Noranda Mines Ltd. in the Olga Lake belt (95). In the Hope Bay volcanic belt, Noranda conducted an airborne EM survey, explored several claim blocks and drilled the COPE-1 claim (62). Noranda Exploration Company Ltd. continued exploration, for copper-bearing breccia pipes in the Mazenod Lake area (97). The company worked on arsenic-copper-cobalt zones carrying erratic gold and silver values on the GAR claims (97).

Scarboro Resources Ltd. used VLF EM and radiometic surveys, to explore its prospecting permit in the Galena Point area (63). Noranda Exploration Company Ltd. explored part of its extensive property on the Mackay Lake – Courageous Lake volcanic belt (96) and claim groups in the James River area (65). Getty Minerals Ltd. conducted a geophysical survey on the BUDD – SMALL claim group near Nodinka Narrows, Mackay Lake (96).

In the Arctic Islands, Trigg, Woollett and Associates Ltd. sampled and surveyed Global Arctic Ltd.s' TR claims near Chris Creek (83), northern Baffin Island. Nanisivik Mines Ltd. conducted regional airborne geophysical drilling near its mine (84). Petro-Canada Exploration Inc. did reconnaissance exploration in the Arctic Islands for base metals, mainly copper, from camps at Koluktoo Bay (86) and Adams River (84), northern Baffin Island, Tanquery Fiord, northwestern Ellesmere Island (80) and Holman Island (82), western Victoria Island.

An aerial view of the Polaris Mine, showing the mill-concentrator building in place and a supply ship at the dock.



In Nahanni District, Pan Ocean Limited optioned the VULCAN massive sulphide prospect (105) from Rio Canex. A diamond drilling program is planned for 1982. Logan Mines Ltd. drilled about 600 m on a lead-zinc-silver bearing skarn on the ROY claims (114). Rideau Resources drilled three holes on the LUCKY claims (104). The most significant intersection gave 26.95 per cent zinc, 6.33 per cent lead, 1.81 per cent copper, 224 g per t silver and 0.96 g per t gold over 1.83 m.

In the Keewatin region, Sulpetro Minerals Ltd. carried out group geophysical surveys and drilled seven holes totalling 2 635 m on claims in the Heninga Lake (90) area. An eighth hole, 63 m long, tested an anomaly on the WENDY claims (89) northwest of Carr Lake.

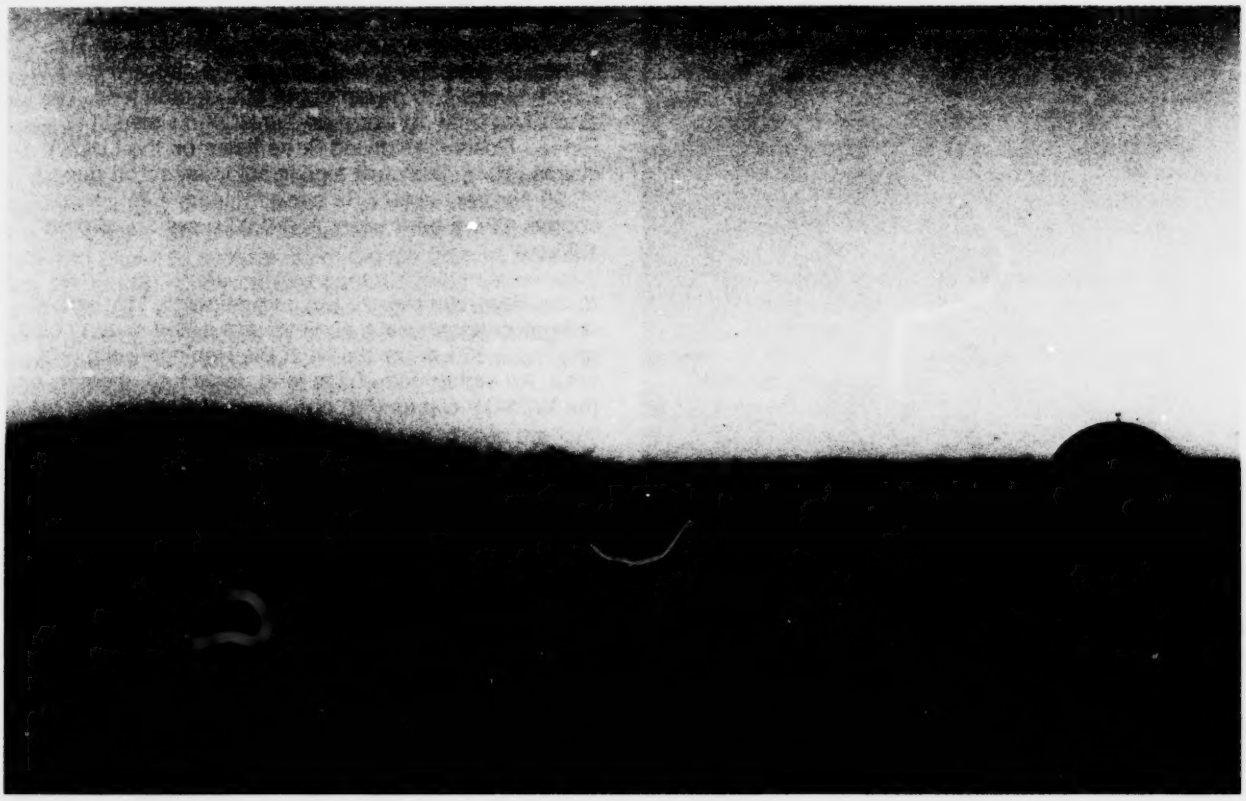
Tungsten

In Nahanni District, Union Carbide Canada Ltd. drilled its LENED tungsten-bearing skarn property with encouraging results (112). Canada Tungsten Mining Corp. drilled to define the extension of its E-Zone, at its Cantung Mine (a). Lorcan Resources carried out EM surveys and geological mapping on the KEN claims adjacent to Amax's Mactung deposit (111). Chip samples from an outcrop averaged 0.23 percent WO_3.

Silver

In Bear Province, Terra Mining and Exploration Ltd. (d) and Echo Bay Mines (e) Ltd. conducted underground and surface drilling in search of ore reserves to support their silver mine operations. Terra drilled more than 20 000 m on the Silver Bear Mine property and on the nearby Norex Mine and Smallwood properties. In Slave Province in the Hope Bay volcanic belt near Melville Sound (61), Lynx Canada Explorations Ltd. explored veins of native silver which located intersect pyrite zones by IP surveys and drilling. Extensive staking followed discovery of base metal showings in the area.

The accommodation building and the television satellite receiver on a crisp winter day at the Polaris Mine, Little Cornwallis Island.



Gold

In Slave Province, Giant Yellowknife Mines Ltd. conducted exploration and drilled 16 347 m at its Giant, Lolor and Supercrest Mines operation at Yellowknife (c). Outside of Yellowknife, Giant drilled auriferous quartz veins on the AP claims (71) at Myrt Lake, and gold-bearing meta-iron formation on the ALLGOOD claims (67) at Regan Lake, 440 km northeast of Yellowknife. Giant encountered some encouragement at Regan Lake, where seven diamond drill holes returned gold assays of up to 20.33 g per t. The company also conducted underground exploration work in the Salmita property on Mackay Lake (69) and drilled on the TREE-TESS group (76) on the Point Lake-Itchen Lake volcanic belt. Cominco Ltd. continued underground definition and exploratory drilling at its Con Mine (C). Cadillac Explorations Ltd. completed roughly 2 000 m of drilling on a gold prospect in the Gordon Lake area (71). Echo Bay Mines Ltd. continued underground drilling at its Lupin Mine, at Contwoyto Lake (66) and drilled the MAY claim (71) at Gordon Lake. Canadian Superior Explorations Ltd. drilled the FIN claims southeast of Echo Bay Mines' Lupin property (66). Terra Mining and Exploration drilled on the TA-DS claim group at Bullmoose Lake (70). Consolidated Five Star Resources explored a prospect at the southern end of Prosperous Lake near Yellowknife (72) by rotary drilling. Ashnola Mines Ltd. explored its Johnson Lake property (72) where the company drove a 49 m decline with 59 m of cross-cutting and drifting to bulk sample a showing. Newmont Exploration drilled near the Discovery Mine in the Giauque Lake area (73) following surface exploration. Noranda Exploration Ltd. explored ground in the same area. Canuc Resources Inc. drilled over 4 000 m on the gold property of Arcadia Explorations Ltd. at Gray's Bay (64) on Coronation Gulf. Lynx Canada Explorations Ltd. drilled its Ida Point gold prospect north of the Roberts Lake silver prospect (61). Roxwell Gold Mines Ltd. drilled a property south of the Tundra Mine (69). Burnt Island Gold Mines drilled a prospect on the GOO claims (71) on an island in Gordon Lake, north of the Camlaren Mine. Gold-bearing zones are indicated on two neighbouring islands.

In the Keewatin District, Esso Minerals Ltd. investigated the precious and base metal potential of Kaminak Group volcanics outcropping north, east and west of Henik Lake (56). A number of areas were staked and explored by detailed mapping, frost boil sampling and EM and magnetometer surveys. Arctic Engineering Services investigated the gold and base metal potential of claims held by Consolidated Five Star Resources Ltd. in the Rankin Inlet area (52). Inco Metals Ltd. searched for base and precious metals in the Rankin Inlet area and staked claims on Pork Peninsula (53) south of Rankin Inlet. Chevron Standard prospected the Kaminak Group volcanics and sediments in the Kaminak Lake area (54). Pan Ocean Oil Ltd. explored for precious metals in the greenstone belts south of Yathkyed Lake (55). W.G. Wahl explored on five prospecting permits held by Kognak Gold Explorations Ltd., northeast of Otter Lake (57). Suncor Ltd. prospected and conducted geochemical surveys in two basins of Aphebian metasediments in the Watterson Lake (59) and Hawk Hill – Mountain Lakes areas (58). Giant Yellowknife Mines Ltd. investigated gold showings and staked claims in the Ennadai Lake area (60). Essex Mineral explored for precious metals on its prospecting permit north of Baker Lake (51).

Tantalum-Columbium

Tantalum Mining Corporation (Tanco) explored pegmatities in the Southern Slave Province (116) southeast of Yellowknife for tantalum. A consultant for Hemisphere Development Corporation investigated tantalum-bearing pegmatites near the shore of Great Slave Lake (117) southeast of Yellowknife. Placer Development Ltd. completed its third drill program on the THOR claims (117), east of Yellowknife, optioned from Highwood Resources Ltd. A Highwood annual report states that 63.5 million t is indicated grading 0.3 kg of tantalum oxide and 4.0 kg of columbium oxide per t. Placer Development is continuing to carry out benefication tests to develop an efficient extraction system.

Lithium

Amhawk Resource Corp. announced geological reserves of 2 million t of 1.12 per cent lithia (Li_2O) on its JAKE property (116) based on the 1981 exploration program.

Barite
In the East Arm of Great Slave Lake Subprovince, Mountain Minerals Ltd. examined a barite deposit near Snowdrift (118) and a prospector from Snowdrift, Mr. Lloyd Anderson, staked another barite showing (118).

Diamonds
Diapros continued to explore for diamonds on the Blackwater River permits (115) by boulder trail mapping, geophysics, geochemistry and drilling.

Iron
Borealis Exploration Ltd. sampled and conducted environmental studies on its magnetite deposits near Roche Bay, Melville Peninsula (119).

Coal
In the Arctic Islands interest in coal resources was expressed by preliminary exploration and acquisition of coal licences. Following reconnaissance surveys, Utah Mines Ltd. was granted 11 coal licences on Axel Heiberg Island (127) and Ellesmere Island (130). Gulf Canada Resources was granted 23 coal licences near Eureka, western Ellesmere Island (129) and west-central Axel Heiberg Island (127). Petro-Canada Exploration Inc. explored an area covered by 133 new coal licences between Eureka (128) and Vendom Fiord (131) on west-central Ellesmere Island and four new coal licences near Fort Conger (132), northeastern Ellesmere Island. Mr. D. McKinnon examined coal seams at Fort Conger and near Lake Hazen (132), northeastern Ellesmere Island and applied for four coal leases.

In the Coal Mine Lake area (134) west of the Mackenzie Delta, Petro-Canada Exploration and Gulf Canada Resources were both granted one coal exploration licence.

Mineral Production Chart – 1972-1981 Table 1
Production des Minéraux – 1972-1981 Tableau 1

ERRATA

Northwest Territories — Territoires du Nord-Ouest

Mineral	1972	1973	1974	1975	1976	1977	1978	1979	1980(R)	1981(P)
Gold – Or	17 713 250	24 262 894	28 651 414	28 754 047	24 390 081	31 336 428	45 769 718	61 868 488	96 920 000	64 894 000
g – gr	9 563 666	7 747 098	5 737 565	5 460 651	6 162 252	6 204 583	6 458 948	5 355 926	4 209 000	3 663 000
Silver – Argent	6 778 965	13 961 789	17 669 851	8 883 385	14 343 774	18 716 934	23 854 173	34 770 651	41 331 000	14 956 000
g – gr	126 257 130	168 591 544	118 728 409	61 319 168	103 794 822	118 325 557	120 237 000	83 358 000	53 000 000	37 000 000
Copper – Cuivre	577 416	1 106 319	840 719	526 889	639 980	445 850	518 993	941 732	679 000	656 000
kg – kg	514 268	786 610	491 923	374 885	424 469	291 959	315 624	397 191	262 000	294 000
Lead – Plomb	27 838 277	32 261 787	34 932 761	37 254 292	26 440 157	40 833 313	56 898 673	80 117 935	55 853 000	63 885 000
kg – kg	81 846 189	90 667 291	76 524 844	83 390 558	52 942 453	58 832 599	70 088 814	60 645 969	51 337 000	65 076 000
Zinc – Zinc	64 792 006	87 541 226	132 251 480	106 650 304	122 438 035	125 104 245	143 911 352	205 600 051	172 556 000	269 047 000
kg – kg	154 103 925	164 449 732	171 886 138	129 002 037	147 610 457	159 709 355	187 809 913	213 323 454	175 685 000	224 206 000
Uranium – Uranium										
kg – kg							250			
Cadmium – Cadmium	205 436	61 152		1 027	3 179	2 677				
kg – kg	36 832	7 620		137	549	386				
Bismuth – Bismuth										
kg – kg										
Tungsten – Tungstène								53 675 858	68 119 000	42 580 000
kg – kg	1 439 757	1 464 468	1 613 700	1 477 731	2 158 154	2 284 409	2 885 619	3 254 067	4 007 000	2 490 000
Arsenic Trioxide										370 000
kg										1 093 176
TOTAL	117 905 350	159 195 167	214 346 225	182 069 944	188 255 206	216 439 447	270 952 909	436 974 715	435 458 000	456 388 000

Source: Mineral Policy Sector, Energy, Mines and Resources and Northern Non-renewable Resources, Indian Affairs and Northern Development.
(P) Preliminary Figures, (R) Revised Figures

Mineral Production Chart – 1972-1981 Table I
Production des Minéraux – 1972-1981 Tableau I

Yukon Territory
Yukon

Mineral	1972	1973	1974	1975	1976	1977	1978	1979	1980(R)	1981(P)
Gold – Or g – gr	234 983 126 871	2 032 502 648 974	4 111 631 823 371	5 255 077 997 986	4 401 075 1 111 949	4 656 118 921 907	8 518 731 1 202 149	13 749 271 1 190 268	63 029 000 2 982 000	63 725 000 3 596 000
Silver – Argent g – gr	8 331 575 155 174 219	15 342 856 188 921 678	26 800 905 180 082 381	28 531 397 196 943 109	12 809 321 92 697 630	20 154 760 127 415 268	28 462 559 143 459 000	54 218 064 129 982 000	114 120 000 147 000 000	69 528 000 172 000 000
Lead – Plomb kg – kg	34 392 366 101 115 601	38 013 324 106 831 187	41 194 600 90 242 227	54 888 680 122 863 633	15 999 040 32 035 681	47 627 667 68 621 899	64 322 403 79 233 298	103 374 279 78 250 062	71 558 000 65 771 000	50 706 000 51 651 000
Copper – Cuivre kg – kg	890 286 792 922	14 791 665 10 517 104	15 571 426 9 111 183	11 928 559 8 487 245	16 045 963 10 642 540	8 953 814 5 843 210	16 474 354 10 018 826	18 442 058 7 778 231	27 082 000 10 433 000	20 192 000 9 129 000
Coal – Charbon tonnes – tonnes	16 724	17 782	15 447	23 326	9 046	18 779	16 578	23 003	16 529	20 860
Zinc – Zinc kg – kg	45 341 287 107 603 704	61 167 027 114 904 734	60 899 995 79 151 212	95 400 540 115 394 553	39 233 926 47 300 153	80 562 287 102 846 637	74 076 827 96 673 141	109 460 866 113 572 783	88 313 000 90 938 000	103 783 000 86 486 000
Cadmium – Cadmium kg – kg	82 759 14 837	45 718 5 697	17 331 1 977	15 423 2 050	13 220 2 284	11 595 1 670	355 58			
Asbestos – Amiante tones – tonnes	13 006 476 92 431	13 915 140 91 384	22 752 400 82 459	32 820 720 103 735	35 310 723 103 431	47 493 872 95 590	26 948 800 53 255			
Nickel – Nickel kg – kg	3 996 762 1 276 691	5 209 621 1 544 473								
Platinum – Platine g – gr	325 573 112 750	149 458 40 870								
TOTAL	106 602 067	150 667 311	171 348 288	228 840 396	123 813 268	209 460 113	218 804 029	299 244 538	364 102 000	307 934 000

Source Secteur des politiques minières. Energie. Mines et Ressources et Ressources non renouvelables du Nord. Affaires indiennes et du Nord Canada
(P) chiffres provisoires (R) chiffres révisés

Mineral Production Chart – 1972-1981 Table I
Production des Minéraux – 1972-1981 Tableau I

Yukon Territory
Yukon

Mineral *Minéraux*		1972	1973	1974	1975	1976	1977	1978	1979	1980(R)	1981(P)
Gold – Or	$	234 983	2 032 502	4 111 631	5 255 077	4 401 075	4 656 118	45 769 718	61 868 488	96 920 000	64 894 000
g – (gr)		126 871	648 974	823 371	997 986	1 111 949	921 907	6 458 948	5 355 926	4 209 000	3 663 000
Silver – Argent	$	8 331 575	15 342 856	26 800 905	28 531 397	12 809 321	20 154 760	23 854 173	34 770 651	41 331 000	14 956 000
g – (gr)		155 174 219	188 921 678	180 082 381	196 943 109	92 697 630	127 415 268	120 237 000	83 358 000	53 000 000	37 000 000
Lead – Plomb	$	34 392 366	38 013 324	41 194 600	54 888 680	15 999 040	47 627 667	518 993	941 732	679 000	656 000
kg – (kg)		101 115 601	106 831 187	90 242 227	122 863 633	32 035 681	68 621 899	315 624	397 191	262 000	294 000
Copper – Cuivre	$	890 286	14 791 665	15 571 426	11 928 559	16 045 963	8 953 814	56 898 673	80 117 935	55 853 000	63 885 000
kg – (kg)		792 922	10 517 104	9 111 183	8 487 245	10 642 540	5 843 210	70 088 814	60 645 969	51 337 000	65 076 000
Coal – Charbon	$							143 911 352	205 600 051	172 556 000	269 047 000
tonnes -		16 724	17 782	15 447	23 326	9 046	18 779	187 809 913	213 323 454	175 685 000	224 206 000
Zinc – Zinc	$	45 341 287	61 167 027	60 899 995	95 400 540	39 233 926	80 562 287				
kg – (kg)		107 603 704	114 904 734	79 151 212	115 394 553	47 300 153	102 846 637	250			
Cadmium -											
Cadmium	$	82 759	45 718	17 331	15 423	13 220	11 595				
kg – (kg)		14 837	5 697	1 977	2 050	2 284	1 670				
Asbestos – Amiante	$	13 006 476	13 915 140	22 752 400	32 820 720	35 310 723	47 493 872				
tonnes -		92 431	91 384	82 459	103 735	103 431	95 590				
Nickel – Nickel	$	3 996 762	5 209 621						53 675 858	68 119 000	42 580 000
kg – (kg)		1 276 691	1 544 473					2 885 619	3 254 067	4 007 000	2 490 000
Platinum – Platine	$	325 573	149 458								370 000
g – (gr)		112 750	40 870								1 093 176
Total	$	106 502 067	150 667 311	171 348 288	228 840 396	123 813 268	209 460 113	270 952 909	436 974 715	435 458 000	456 382 000

Source: Mineral Policy Sector, Energy, Mines and Resources and Northern Non-renewable Resources, Indian Affairs and Northern Development.
(P) Preliminary Figures, (R) Revised Figures

Mineral Production Chart – 1972-1981 Table 1
Production des Minéraux – 1972-1981 Tableau 1

Northwest Territories — Territoires du Nord-Ouest

Mineral *Minéraux*		1972	1973	1974	1975	1976	1977	1978	1979	1980(R)	1981(P)
Gold – Or	$	17 713 250	24 262 894	28 651 414	28 754 047	24 390 081	31 336 428	8 518 731	13 749 271	63 029 000	63 725 000
g – (gr)		9 563 666	7 747 098	5 737 565	5 460 651	6 162 252	6 204 583	1 202 149	1 190 268	2 982 000	3 596 000
Silver – Argent	$	6 778 965	13 961 789	17 669 851	8 883 385	14 343 774	18 716 934	28 462 559	54 218 064	114 120 000	69 528 000
g – (gr)		126 257 130	168 591 544	118 728 409	61 319 168	103 794 822	118 325 557	143 459 000	129 982 000	147 000 000	172 000 000
Copper – Cuivre	$	577 416	1 106 319	840 719	526 889	639 980	445 850	64 322 403	103 374 279	71 558 000	50 706 000
kg – (kg)		514 268	786 610	491 923	374 885	424 469	291 959	79 233 298	78 250 062	65 771 000	51 651 000
Lead – Plomb	$	27 838 277	32 261 787	34 932 761	37 254 292	26 440 157	40 833 313	16 474 354	18 442 058	27 082 000	20 192 000
kg – (kg)		81 846 189	90 667 291	76 524 844	83 390 558	52 942 453	58 832 599	10 018 826	7 778 231	10 433 000	9 129 000
Zinc – Zinc	$	64 792 006	87 541 226	132 251 480	106 650 304	122 438 035	125 104 245				
kg – (kg)		154 103 925	164 449 732	171 886 138	129 002 037	147 610 457	159 709 355	16 578	23 003	16 529	20 860
Uranium – Uranium	$							74 076 827	109 460 866	88 313 000	103 783 000
kg – (kg)								96 673 141	113 572 783	90 938 000	86 486 000
Cadmium -											
Cadmium	$	205 436	61 152		1 027	3 179	2 677	355			
kg – (kg)		36 832	7 620		137	549	386	58			
Bismuth -								26 948 800			
Bismuth	$							53 255			
kg – (kg)											
Tungsten -											
Tungstène	$										
kg – (kg)		1 439 757	1 464 468	1 613 700	1 477 731	2 158 154	2 284 409				
Arsenic Trioxide	$										
kg											
Total	$	177 905 350	158 925 167	214 346 225	182 069 944	188 254 206	216 439 447	218 804 029	299 244 538	364 102 000	307 934 000

Exploration and Mine Development Stages as Depicted in Tables II and III

Stage		Activity (in part or total)	Purpose
1	Reconnaissance Exploration	Stream sediment and water sampling; reconnaissance geological mapping and prospecting; airborne geophysical surveys: radiometric, electromagnetic and magnetic; staking.	To locate anomalies. An anomaly is an area of the earth having properties which deviate from normal. A lake having unusual amounts of uranium in the bottom sediments, or rocks with high electrical conductivity are examples of anomalies.
2	Detailed Ground Follow-up	Detailed soil geochemical surveys; radiometric, magnetic, electromagnetic, gravimetric and other geophysical surveys; prospecting for mineralized outcrops; detailed geological mapping.	To confirm the presence of the reconnaissance anomalies before drilling or trenching.
3	Exploratory Drilling and Trenching	Sampling of shallow anomalies by blasting trenches to expose fresh rock; sampling of overburden by shallow drilling; diamond drilling of bedrock to depths of up to several thousand feet; chemical analysis of core samples.	To determine if the mineralized body is of sufficient size and quality to justify the high costs of future development work.
4	Systematic Predevelopment Work and Trenching	Closely spaced diamond drilling; ore-reserve calculations; preliminary mining and metallurgical studies; start environmental studies; preliminary economic evaluation including market studies.	To establish ore reserves, production rate, profitability.
5	Final Feasibility Study	Engineering design of mine, mill and ancillary services; environmental impact assessment; final economic evaluation – financing.	To determine if mine should be brought into production.
6	Mine Development	Establish operating organization; development of underground or open-pit mine; construction of treatment plant and ancillary services; environmental impact assessment; final economic evaluation — financing.	To prepare the mine for production. This stage normally involves contractors and consultants each having expertise in specific areas.
7	Mining and Milling Operation	Mining and milling of the ore and marketing of the product.	Following a tune-up period the new mine normally reaches its rated capacity within the first year. In a joint-venture project each partner is responsible for marketing its share of the product from the operation.

Table II
Exploration – Yukon

Location (1)	Company (2)	Property/ Area (3)	Mineral-ization (4)	Exploration Stages (5)
1	Mattagami	RIKI	Pb, Zn, U	2
2	Anaconda	STYX	Pb, Zn	3
3	Mattagami	DALE	Pb, Zn	2
4	Rio Tinto	CORD	Pb, Zn	3
5	Amax	DOC	Pb, Zn, Ag	3
6	Mattagami	FIONA	Pb, Zn	2
7	Getty/US Steel	Clear L.	Pb, Zn	3*
8	Anaconda	ACE	Pb, Zn	3
9	Cyprus Anvil	ANVIL	Pb, Zn	6
10	Getty	EVA	Pb, Zn	2
11	Cyprus Anvil	TENAS	Pb, Zn	3
12	AGIP	NEVE	Pb, Zn	2
13	Amax	FAN	Pb, Zn	2
14	Cominco	NIDD	Pb, Zn	3
15	Pan Ocean	JASON	Pb, Zn, Ag	3**
15	Amax	MACTUNG	W	5
15	Hudson Bay	TOM	Pb, Zn	5
15	Canadian Nickel	DUO	Pb, Zn	1
16	Placer/US Steel	Howard's Pass	Pb, Zn	4
17	Hudson Bay	Pelly Banks	Pb, Zn	3
18	Cominco	FIN	Pb, Zn	2
19	Cominco	BARB	Pb, Zn, Ag	2
20	Cyprus Anvil	ANMAC	Pb, Zn	1
21	Noranda/Asarco	Quartz L.	Pb, Zn	3
22	Sulpetro	MEL	Pb, Zn, Ba	2
23	Amax	MID	Pb, Zn	2
23	Amax	WOLF	Pb, Zn	3
24	Chevron	BAR	Pb, Ba	1
25	Canadian Nickel	RAM	Pb, Zn, Ag	2
26	Prism	VAL, VERA	Pb, Zn, Ag	4
27	Welcome North/Esperanza	LADY DI	Pb, Zn	1
28	Mattagami	TOUCHE	Zn	2
29	Canadian Occidental	MOX	Pb, Zn, Cu, Ag	2
30	Cominco	MICKEY	Pb, Zn, Ag	3
31	Archer, Cathro	FYIQ	Pb, Zn, Ag	2
32	Serem	LOOTZ	W	2
33	Noranda	RAIL	W	3
34	Cominco	PLUTO	Mo, W	3*
35	Cortin Joint Venture	SNARK	Sn	2
36	Cortin Joint Venture	EPD	Sn	3*
37	Canada Tungsten	Ray Gulch	W	3
38	Cortin Joint Venture	JABBERWOCK	Sn	2
39	Island Mining	WAYNE	W, Au	3
39	Canadian Nickel	RAM	Pb, Zn, Ag	2
40	Dupont	TWO BUTTES	W	3
41	Union Carbide	KALZAS TWINS	W	2
42	AGIP	ICE, FIRE,SUN	Mo, W, Cu	2
43	Placer	CLEA	W	3*
44	Canadian Occidental	HATCH, THATCH	W, Mo	2
45	Hudson Bay	CAB	W	3*
45	Amax	GREW	Pb, Zn	2
46	Union Carbide	RENA	Mo	2
47	Noranda	ROSE	W	3
47	Archer, Cathro	CREAM	W	2
48	Archer, Cathro	SNEET	W	2
48	Archer, Cathro	IVO	W	3
49	Archer, Cathro	SPORK	W	2
50	Amoco/Tintina Silver	Red Mountain	Mo	3**

51	Newmont	MINDY	Sn, Zn	3
52	Serem	STONEAX, SOURCE	W	2
53	Serem	TEAM	W	3
54	Dupont	DU, SWIFT	Sn	3
54	DC Syndicate	SIN	Sn	3
55	Amax	LOGTUNG	W	4
56	Canadian Occidental	GOAT	W, Cu, Zn	2
57	Amax/Pan Ocean/Serem	FIDDLER	W	3
58	Serem	CABIN, URSUS	W	2
59	DC Syndicate	JC	Sn	3*
60	Archer, Cathro	APE	U	2
60	Texaco	IOTA	U	1
61	Archer, Cathro	PIKE	U	2
61	Archer, Cathro	FACE	U	2
62	Archer, Cathro	PTERD	U	3
63	Archer, Cathro	BOND	U	2
64	AGIP	GAMMON	U	2
65	Dawson Eldorado	LONE STAR	Au	2
65	Archer, Cathro	TEFATJV	Au	2
66	Rio Tinto	IDA	Au	3
67	Archer, Cathro	BLENDE	Ag, Pb, Zn	1
68	Rio Tinto	STROKER	Au	2
69	Canada Tungsten	Mount Keno Mine	Ag, Pb	2
69	Canada Tungsten	ZAP	Ag	3
69	Canada Tungsten	IDAHO	Ag	2
69	Turner Energy	Rambler Hill	Ag	2
70	Hudson Bay	Sonora Gulch	Au	3
71	Archer, Cathro	NIT	Au	1
71	Archer, Cathro	LILYPAD	Ag	3
72	Nat Joint Venture	KLAZAN, NITRO	Au	1
73	Noranda	DART	Au	2
73	Arctic Red Resources	FREEGOLD	Au, Ag	3
73	Arctic Red Resources	LAFORMA	Au	2
74	Silver Tusk	TINTA HILL	Au, Ag, Zn	4
75	AGIP	KUKU	Au	2
76	Archer, Cathro	JUBILEE	Au	3
77	United Keno Hill	VENUS	Au, Ag	6
78	Canadian Occidental	LICK	Ag, Pb, Zn	2
79	Cima	Mt. Hundere	Ag, Pb, Zn	3
80	Mattagami	MARN	Cu	3
81	United Keno Hill	STU	Cu	2
82	Esso Minerals	JULIA	Cu, Au	3
83	Archer, Cathro	TJOP	Asbestos	2
84	Milchem	ST. BRIDGET	Ba	1
85	Yukon Barite	TEA	Ba	2
86	Sulpetro	Rock R.	Coal	1
87	Logan	ROMAN	Pb, Zn	2
88	Golden Gate	REX	Asbestos	3
89	BRX	TAWA	Au, Ag, Pb	2
90	B.A. Copper	TOWER	Cu	1
91	Cima	PIKE	Ag, Cu	3
92		Sixty Mile R.	Placer Au	7
93		Hunker Creek	Placer Au	7
93		Klondike	Placer Au	7
94		Sulphur Creek	Placer Au	7
95		Clear Creek	Placer Au	7
96		Burwash Creek	Placer Au	7
97		Livingstone Creek	Placer Au	7

Table III
Exploration – Northwest Territories

Location (1)	Company (2)	Property/ Area (3)	Mineral-ization (4)	Exploration Stages (5)
1	Uranerz	Amer L.	U	3
1	Union Oil	Amer L.	U	2
2	Seru Nucléaire	Tehek L.	U	2
3	Hudson's Bay	Whitehills L.	U	2
4	Urangesellschaft	Baker L.	U	2
5	BP Minerals	Schultz L.	U	3*
5	Eldorado	Rumble L.	U	1
5	Mobil Energy	Schultz L.	U	2
6	Seru Nucléaire	Deep Rose L.	U	2
6	Uranerz	Deep Rose L.	U	1
7	Union Oil	Garry L.	U	2
7	Texasgulf	Garry L.	U	2
7	Uranerz	Garry L.	U	2
8	Union Oil	Sand L.	U	2
8	Mobil Energy	Sand L.	U	1
9	Texasgulf	Consul R.	U	2
10	Westmin	Aberdeen L.	U	2
10	Canadian Nickel	Sand L.	U	2
11	Westmin	Thelon	U	2
12	Anaconda	Marjorie L.	U	2
12	Hudson's Bay	Aberdeen L.	U	2
12	Hudson's Bay	Beverly L.	U	2
13	Urangesellschaft	Schultz L.	U	2
13	Cominco	Aberdeen L.	U	3
13	Marline	Aberdeen L.	U	3
14	Urangesellschaft	LONE GULL	U	2
14	Comaplex	Judge Sissons L.	U	2
15	Phillips Petroleum	Baker L.	U	1
16	Pan Ocean	Bissett L.	U	2
16	Noranda	Bissett L.	U	2
17	Pan Ocean	Kazan R.	U	2
18	Hudson's Bay	Thirty Mile L.	U	2
18	Urangesellschaft	Thirty Mile L.	U	2
18	Comaplex	Forde L.	U	2
19	AGIP/Noranda	Tulemalu L.	U	2
19	Union Oil	Tulemalu L.	U	2
20	Pan Ocean/Noranda	Yathkyed L.	U	3**
21	AGIP/Noranda	Carruthers L.	U	2
22	Urangesellschaft	Nowleye L.	U	2
23	AGIP/Noranda	Kamilukuak L.	U	2
24	PNC Canada	Foster L.	U	2
25	Union Oil	Gravel Hill L.	U	2
25	Anaconda	Mantic L.	U	2
25	Texasgulf	Mosquito L.	U	1
26	PNC Canada	Beaverhill L.	U	2
27	Canadian Nickel	Thelon	U	2
27	Gulf Canada	'L' L.	U	3
28	Urangesellschaft	Eyeberry L.	U	2
29	Urangesellschaft	'925' L.	U	2
29	Hudbay	Dubawnt Basin	U	2
30	Seru Nucléaire	Sid L.	U	2
31	Trigg Woollett	Nonacho L.	U	1

32	Uranerz	Powder L.	U	2
33	PNC Canada	Thekultili L.	U	2
34	PNC Canada	Thekultili L.	U	3**
35	Esso Minerals	CRIS	U	3
36	Gulf Canada	East Arm	U	1
37	Scurry Rainbow	PD (Union Is.)	U	3
37	Minequest	East Arm	U	1
38	Scurry Rainbow	Basile Bay	U	2
38	Chevron	SHUM	U	2
39	Anaconda	East Arm	U	1
39	Gulf Canada	East Arm	U	1
40	Eldorado	Bathurst Trench	U	2
41	Noranda	Kent Pen.	U	2
42	Uranerz	GL, Asiak R.	U	3
43	Uranerz	Asiak R.	U	1
44	BP Minerals/Union Carbide	Coppermine R.	U	3
45	BP Minerals/Alberta Energy	RAD	U	2
45	BP Minerals/Alberta Energy	TIM	U	3
46	Esso Resources	Dismal L.	U	2
46	Esso Resources	WD	U	3
47	Philips Petroleum	Hornby Bay	U	2
48	Esso Resources	Dease Pen.	U	1
49	AGIP	Leith Pen.	U	3
50	Chevron Standard	WOP (Deep L.)	U	3
51	Essex Minerals	Amer L.	Au	1
52	Consolidated Five Star	Rankin Inlet	Au	2
53	Inco Metals	Pork Pen.	Au	2
54	Chevron Standard	Kaminak L.	Au	2
55	Pan Ocean	Yathkyed L.	Au	2
56	Esso Minerals	Yathkyed L.	Au	2
57	Kognak Gold	Yathkyed L.	Au	1
58	Suncor	Hawk Hill L.	Au	1
59	Suncor	Watterson L.	Au	1
60	Giant Yellowknife	Ennadai L.	Au	1
61	Lynx Canada	Hope Bay	Ag	3
62	Noranda	COPE (Hope Bay)	Ag	3
63	Scarboro Resources	Galena Point	Ag, Pb	2
64	Canuc Resources	ARCADIA	Au	3**
65	Noranda	James R.	Ag	2
65	Saskatchewan Mining	High L.	Au	1
66	Echo Bay	LUPIN	Au	6
66	Canadian Superior	FIN	Au	3
67	Giant Yellowknife	ALLGOOD	Au	3
67	Saskatchewan Mining	Regan L.	Au	1
68	Saskatchewan Mining	Back R.	Au	1
69	Giant Yellowknife	SALMITA	Au	4
69	Roxwell	TUNDRA	Au	3
70	Terra	TA-DS	Au	3
71	Giant Yellowknife	Myrt L.	Au	3
71	Echo Bay	MAY (Gordon L.)	Au	4
71	Burnt Island	GOO (Gordon L.)	Au	3
71	Cadillac	Gordon L.	Au	3*

72	Cominco	Negus Point	Au	3
72	Consolidated Five Star	Prosperous L.	Au	3
72	Ashnola	Johnson L.	Au	4
73	Newmont	Giauque L.	Au	3
73	Noranda	Giauque L.	Au	2
74	Noranda	WIJ, INN, EDI	Au	2
75	Paulson	Indin L.	Au	2
76	Giant Yellowknife	TREE-TESS	Au	3
77	Terra	Camsell R.	Ag	3
77	Echo Bay	Contact L.	Ag	3
78	F. Blachut	Blackstone R.	Placer Au	7
79	Turner and Linberg	Liard R.	Placer Au	1
80	Petro-Canada	Tanquery Fiord	Cu	1
81	Cominco	Cornwallis Is.	Pb, Zn	2
83	Trigg Woollett	TR (Chris Creek)	Pb, Zn	2
84	Petro-Canada	Adams R.	Cu, Pb, Zn	1
84	Nanisivik	Nanisivik	Pb, Zn	2
85	Nanisivik	Borden Pen.	Pb, Zn	1
86	Petro-Canada	Koluktoo Bay	Cu, Pb, Zn	1
87	Cominco	Longstaffe Bluff	Pb, Zn	2
88	P. Quappik	Nunatak Is.	Pb, Zn, Mo	1
89	Sulpetro	WENDY (Carr L.)	Cu, Zn	3
90	Sulpetro	Heninga L.	Cu, Zn	3*
91	Texasgulf	Thelon		1
92	Cominco	Hackett R.	Zn, Pb, Cu, Ag	3
93	Noranda	James R.	Pb, Zn	2
94	Texasgulf	Amoogabooga L.	Cu, Zn, Ag	3
95	Texasgulf	Olga L.	Cu, Zn, Ag	3
96	Noranda	MacKay L.		2
97	Noranda	Mazenod L.	Cu	2
97	Noranda	GAR	Cu, Co, Au, Ag	3
98	F. Blachut	Redcliff Is.	Co, Ni, Ag, U	1
99	Giant Yellowknife	Maufelly Point	Cu	2
100	Pine Point	Pine Point	Pb, Zn	3**
101	Pine Point	Pine Point	Pb, Zn	3**
101	Westmin	Pine Point	Pb, Zn	3**
102	Cominco	Hay River	Pb, Zn	3
103	Cadillac	Prairie Creek	Pb, Zn, Ag	6
104	Rideau Resources	LUCKY	Zn, Pb, Cu,Ag, Au	3
105	Pan Ocean	VULCAN	Pb, Zn	2
105	Pan Ocean	BIG RED	Pb, Zn	2
106	Placer/US Steel	Howard's Pass	Zn, Pb	4
107	Noranda	TAN-GRAD		3
108	Noranda	NITE, KEELE	Cu	2
109	Kelvin/Aquitaine	Misty L.		1
110	Canadian Nickel	Mountain R.	Pb, Zn	3
111	Amax	MACTUNG	W	6
111	Lorcan Resources	KEN	W	2
111	Noranda	MacMillan Pass		1
112	Union Carbide	LENED	W	3
113	Union Carbide	Flat R.	W	2
113	C. Turner	Flat R.	W	1

113	Canada Tungsten	BAKER	W	2
114	C. Turner	Flat R.	W	1
114	Logan	ROY	Pb, Zn, Ag	3
115	Diapros	Blackwater R.	Diamonds	3
116	Amhawk	JAKE	Li	4
116	Tantalum Mining	Beaulieu R.	Ta	1
117	Placer	THOR	Ta	3
117	Hemisphere	Beaulieu R.	Ta	1
118	Mountain Minerals	Snowdrift	Ba	2
118	L. Anderson	Snowdrift	Ba	1
119	Borealis	Roche Bay	Fe	2
120	DIAND	Mary R.	Soapstone	1
121	DIAND	Clearwater Fiord	Soapstone	1
122	DIAND	Cape Dyer	Soapstone	1
123	DIAND	Hoare Bay	Soapstone	1
124	DIAND	Nudlung Fiord	Soapstone	1
125	McKinnon & Bradshaw	Strand Fiord	Coal	1
126	Gulf Canada	Axel Heiberg Is.	Coal	1
127	Utah Mines	Axel Heiberg Is.	Coal	1
127	Petro-Canada	Axel Heiberg Is.	Coal	1
127	Gulf Canada	Axel Heiberg Is.	Coal	1
128	Petro-Canada	Eureka	Coal	1
129	Gulf Canada	Eureka	Coal	1
130	Utah Mines	Bay Fiord	Coal	1
131	Petro-Canada	Vendom Fiord	Coal	1
132	McKinnon & Bradshaw	Fort Conger	Coal	1
132	Petro-Canada	Fort Conger	Coal	1
133	Petro-Canada	Banks Is.	Coal	1
134	Petro-Canada	Coal Mine L.	Coal	1
134	Gulf Canada	Coal Mine L.	Coal	1
135	Saskatchewan Mining	Contwoyto L.	Au	1

Footnotes for Tables II and III

(1) Table location is made with reference to corresponding numbers on Yukon and Northwest Territories Maps. Locations are approximate.

(2) Abbreviated name of the Company is used: Expl. (Exploration), Ltd. (Limited).

(3) Geographical areas are indicated by small print, whereas claims and groups are capitalized. Abbreviated words are: Peninsula (Pen), River (R), Lake (L).

(4) Metal(s) of primary importance defined by chemical symbols: copper (Cu), gold (Au), lead (Pb), Tantalum (Ta), lithium (Li), molybdenum (Mo), silver (Ag), barium (Ba), cobalt (Co), tin (Sn), tungsten (W), and uranium (U); other abbreviations include: placer (pl.), production (pr.).

(5) Note drilling under Stage 3 in excess of 1400 meters (4600 feet) is denoted by an "*" and that in excess of 3000 meters (9840 feet) by "**".